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USSR Report

MILITARY AFFAIRS

AVIATION AND COSMONAUTICS

No. 12, December 1983

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1 March 1984

**USSR REPORT
MILITARY AFFAIRS**

AVIATION AND COSMONAUTICS

No. 12, December 1983

Except where indicated otherwise in the table of contents the following is a complete translation of the Russian-language monthly journal AVIATSIYA I KOSMONAVTIKA published in Moscow.

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GENERAL BULANKIN CRITICIZES LACK OF AIR SAFETY DISCIPLINE

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, Dec 83 (signed to press 1 Nov 83) pp 1-3

[Article by Honored Military Pilot USSR Lt Gen Avn Viktor Sergeyevich Bulankin, commander of air forces, Red-Banner Belorussian Military District: "Discipline -- The Main Condition for Flight Operations Safety"]

[Text] One of the main directional trends in further development of the socialist society, as specified at the 26th CPSU Congress, is an all-out strengthening of discipline and rule of law as well as increased organization and responsibility across the board. CPSU Central Committee General Secretary Comrade Yu. V. Andropov emphasized in his address at the November (1982) CPSU Central Committee Plenum: "We must wage a more determined campaign against any and all violations of party, state, and labor discipline." Air Forces personnel of the Red-Banner Belorussian Military District wholeheartedly and enthusiastically took in these instructions, aware of the fact that firm military discipline is the first condition for further increasing the combat readiness of units and subunits and improving flight operations safety.

The modern aircraft with which we are equipped boast a broad range of speeds and altitude capabilities, extreme mobility, and considerably enhanced firepower. Even the finest performance characteristics, engineered into our aircraft systems, however, will not be fully realized if the personnel operating them do not fully master the equipment and fail to learn to service and maintain it in a high-quality and knowledgeable manner and to employ it in combat effectively and efficiently. It is important to realize that combat readiness and flight operations safety are unified elements within the man-equipment-flight-combat employment system.

Firm discipline and observance of regulations are essential here. Any departure from the requirements of guideline documents, carelessness and lack of conscientiousness are fraught with serious consequences. One of the most important directional thrusts in the campaign for high-quality performance of flight assignments and securement of flight operations safety is to ensure that flight discipline becomes a firm standard of behavior for each and every aviator.

Since the beginning of the new training year, aviation personnel have been making a full and persistent effort to improve their professional skills in the classroom, at the airfield, in the practice areas and on the ranges. There exists considerable reserve potential for further increasing air, weapons and tactical proficiency and for welding together military collectives. Socialist competition is in progress in the units and subunits. It is expanding day by day.

Recently the international situation has become sharply aggravated. The danger of war is increasing, through the fault of the aggressive forces of imperialism and U.S. military circles, as well as their NATO bloc allies. U.S. President Reagan, assuming the role of conductor in the escalation of war hysteria and no-holds-barred anti-Sovietism, is assigning the role of hostage to a number of European countries, seeking to deploy intermediate-range nuclear missiles on their soil. Those in power in the United States are nurturing crazy ideas of gaining world domination with the aid of the latest means of mass annihilation of human lives. Toward this end they have already formulated specific arms race plans for the coming 5 years and extending up to 1990.

The Soviet Union, aware of the growing military threat on the part of the most militant imperialist forces, is compelled to make every effort to strengthen its defense might and to maintain the USSR Armed Forces in a continuous state of combat readiness. Soviet aviation personnel, just as the fighting men of the other branches of the military, have been assigned important, critical missions. A guarantee of successful performance of these missions lies in firm military discipline, organization, and maintenance of firm discipline in the units and subunits, corresponding to the structure of military life and grounded on unswerving observance of regulations and laws governing military service and flight activities.

Such terms as time discipline, process discipline, alert-duty discipline, follow-through discipline, and interaction discipline have been firmly adopted in the military. In other words, every activity requires observance of precise procedures and specified job performance rules and regulations. This also applies in full measure to ensuring flight operations safety. This involves aircraft servicing and maintenance in technical maintenance units, aircraft pre-flighting in the flights, actions by pilots, flight operations controller team, and organization of each flight operations shift.

This year aviation units have received well-prepared young people. Many graduates of flight schools will be working on mastering combat equipment and weapons which are new to them. It is important that they reinforce acquired knowledge and skills from the very outset, that they thoroughly study current guideline documents governing flight operations related activities and measures to ensure flight operations safety.

It is essential constantly to improve methods of training and indoctrinating combat pilots and to instill in them a strong feeling of personal responsibility for exemplary performance of their assigned tasks. Paramount attention should be focused on strengthening discipline and organization. It is precisely these which first and foremost ensure successful professional advance,

further improvement in aviator combat skills, and flight operations safety. This has been proven by many years of practical experience and is reflected in regulations and formal instructions. He who fails to observe the requirements of discipline should not be permitted to fly or to service today's highly complex aircraft systems.

"A high degree of discipline constitutes the foundation of Armed Forces combat readiness," stated CPSU Central Committee Politburo member and USSR Minister of Defense MSU D. F. Ustinov. "It is for good reason that it is called the mother of victory. Discipline unites people, increases their capabilities 10-fold, and helps them reach the stated objective faster and at less cost. On the other hand, lack of discipline engenders disorder, disorganization, and in conditions of war leads to unnecessary losses and to defeat."

Headquarters staffs play a determining role in ensuring smooth operations of aviation units and subunits, high quality of performance of their combat training tasks and missions, and flight operations safety. Success of aviation personnel combat training depends in large measure on how a staff plans and schedules activities for a flight operations day (night), how precisely and promptly it gives notification of flight operations and organizes their logistic support, how it draws up operations schedules and verifies flight readiness of personnel and equipment, and monitors progress in pilot simulator training in the squadrons. It is the duty of every aviation commander daily to devote close attention to staff operations and to guide headquarters staff activities pertaining to producing a cohesive military unit, planning and organizing training classes with officers, strengthening discipline, order and organization. Experience indicates that wherever the commanding officer constantly pays attention to the job performance of his staff officers, where each and every aviator is thoroughly familiar with his duties and performs them in a precise manner, one finds greater demandingness on the part of officer-leaders, firmer oversight, and the highest degree of follow-through. Such units and subunits experience no aircraft mishaps for extended periods of time, and serious near-accident situations are reduced to a minimum.

We can cite as an example military pilot 1st class Lt Col A. Osten, commanding officer of an aviation regiment. For a number of years now his unit has had no aircraft accidents. It is distinguished by a high degree of organization and firm discipline. Indoctrination work with aircraft commanders and flight commanders is fully in conformity with the demands of the appropriate manuals, orders and regulations. Regimental chief of staff Maj V. Shalukhin always keeps posted on the situation in the subunits. He skillfully guides the work of the squadron executive officers and gives them prompt, skilled assistance in planning, organizing and conducting training activities.

In the regiment they have not only instituted the keeping of detailed records on errors made by flight personnel. The main thing is that each error is thoroughly analyzed with the aid of flight recorder data, is brought to the notice of all flight personnel, and this in turn ensures that errors are not repeated. Flight debriefings are organized in a methodologically correct manner.

Take, for example, the squadron led by military pilot 1st class Lt Col V. Yakovlev. It is a competition leader. Political indoctrination work is conducted on a high methodological level in this subunit, and personnel unswervingly observe the demands of the USSR minister of defense and commander in chief of the Air Forces on ensuring flight operations safety. Aviation personnel skillfully apply theoretical knowledge in practical activities and receive no mark worse than excellent or good for hands-on activities. Considerable credit for these achievements must go to the squadron's deputy commander for political affairs, military pilot 1st class Maj A. Kozyrev. He was awarded the order "For Service to the Homeland in the USSR Armed Forces," 3rd Class, for successes achieved by the subunit in combat and political training and for his personal flying skills. This officer successfully passes on his own professional experience and know-how to his subordinates, increasing their level of skill.

We have a term -- quality mastery of job duties. It boils down in the final analysis to the ability to see the main element in one's work, to keep an eye on the activities of one's subordinates, and skillfully to guide these activities toward accomplishment of assigned tasks. It is important here not only to note deficiencies in a prompt and timely manner but also to correct them in rapid fashion, to have an eye to the future and promptly to take measures eliminating negative aspects in the activities of one's aviation unit and instilling in subordinates a strong sense of responsibility and flawless follow-through. If an officer does not possess these qualities in full measure or has lost them for any reason, detriment to combat training and flight operations safety is inevitable.

An aircraft sustained damage in one of the regiments. Lt V. Sarychev, while flying solo, touched down at excessive airspeed and in an excessively nose-low attitude. The pilot escaped injury by sheer fortuitousness. The subsequent debriefing and accident analysis revealed that an inadequately prepared pilot had been allowed to fly. This recent air-force school graduate had not yet acquired sufficient skills. The error in landing technique had occurred repeatedly. The pilot's superiors had failed to attach proper importance to it, although this error in technique had been duly noted down. The flight commander, Maj V. Pronyakov, and the squadron commander, Lt Col V. Shikov, had explained to the lieutenant how to distribute his attention on approach and landing and how this aircraft differed from the one he had flown at flight school. They had failed to complete the job, however. They had failed to give the young pilot practical teaching on making a landing. Therefore they should not have allowed him to solo. Further study of the circumstances behind the incident convinced the investigators that in other subunits of the regiment as well inspection log entries were being made on an irregular basis, and in work with the younger pilots there were occurring departures from the requirements of documents governing flight operations.

Regular flight operations officer Lt Col A. Nefedov also did a less than perfect job during that flight operations shift. He could not help but have seen the errors being made by Lieutenant Sarychev during landing approach, flare, and touchdown. He failed, however, to issue clear-cut commands and recommendations to correct the pilot's mistakes.

The incident was a consequence of the fact that the unit commander and his deputies had failed adequately to monitor the job performance of the regimental headquarters staff and squadron executive officers. This had a negative effect on follow-through, demandingness, and organization of training of the young aviators. There is obvious here a cause-and-effect relationship between poor follow-through and the landing accident. Such consequences are the inevitable result of complacency and a diminished effort to monitor execution of job duties by assigned personnel and observance of rules and regulations pertaining to flight operations.

Demands on command personnel pertaining to training and indoctrination of subordinates, especially young officers, have increased considerably today. In order to teach others, leader personnel must also constantly work to improve flying skills, methods and pedagogic training, and more thoroughly study the equipment, aerodynamics, and tactics. He who ignores this inevitably loses professional skills, authority and, consequently, the right to command others.

Increased demands are also being imposed on air traffic control both at the airfield, at the weapons ranges and airborne drop areas, due to the high speed of aircraft, their increased firepower, and reduced time allocated for maneuvering and combat employment. Flight operations officers must consider these factors. It is important to pay particular attention to changes in the air situation, to respond instantly to it, decisively and aggressively to assist airborne crews.

The best flight operations officers in the district's air forces include Lt Col B. Gorobets, A. Sidorov, and G. Petrov, Majs P. Knyazev and V. Rubtsov. When preparing for flight operations at command posts and in the tower they always hold practice sessions in air traffic control and precision coordination, seeking to achieve complete mutual understanding between tactical control officers and the other ATC team specialists. Airborne aircrues always execute their commands with precision and feel confident even in an extreme situation.

The overwhelming majority of district air forces aviation command personnel are successfully handling their assigned duties. These officers have a strongly-developed feeling of responsibility for the assigned task, and they are characterized by flawless efficiency. And the fact that in the military collectives under their command there occur no air mishaps and an absolute minimum of near-accident situations is quite logical. It once again confirms that strong military discipline, precise organization of combat training, continuous verification of execution, and professional vigilance constitute a reliable barrier against violations of the regulations governing flight operations, and therefore against air mishaps and near-accident situations.

At the same time we should state that, although there have been definite achievements in combat and political training, we have not yet eradicated certain negative phenomena which adversely affect combat readiness and flight safety. Not everywhere is work with flight commanders adequately coordinated. Not everything has been done to strengthen their authority and prestige and to improve their methods skills. Some squadron commanders, in place of daily, painstaking training and indoctrination work with this category of leader personnel, employ unwarranted, excessively close supervision, thus depriving their

subordinates of independence, initiative, and boldness in decision making. These are serious deficiencies in training sequence, since there is lost the force of the main principle of military education science: the commander teaches and indoctrinates his subordinates. As a consequence, flight commanders teach and indoctrinate pilots considerably below their capabilities, and show unnecessary relaxation of demands in checking their preparations for flight operations. Such an attitude toward one's job is akin to complacency. It negatively affects flight operations safety.

An important means of strengthening a commander's authority and prestige is his personal exemplariness both on and off duty. Subordinates see how he performs his duties and in large measure try to emulate him. He must examine his every step and every action in light of the requirements of operating procedures, rules and regulations, in order to increase combat readiness, ensure flight operations safety, and strengthen military discipline. It is bad when a private commits a disciplinary violation, but it is immeasurably worse when such a violation is committed by a commander. It has quite different repercussions. Senior-level officers should take this into consideration when determining measures to take against guilty parties.

Flight commander military pilot 1st class Capt N. Postyka was teaching an aircraft commander how to land his helicopter in autorotation mode. This is a complex training activity, demanding of the instructor extreme composure and heightened alertness. Due to his personal lack of discipline and less than adequate monitoring of the pilot's actions, however, a near-accident situation developed, a fact which was not reported to the squadron commander. The violation of proper flight procedures was discovered from the flight recorder data. The instructor's diminished sense of responsibility for flight safety led to a departure from discipline requirements. Captain Postyka had thoroughly studied the procedure to be followed, but in the air he relied entirely on his subordinate and failed to keep an eye on the gauges.

One can scarcely exaggerate the importance of monitoring and verification of execution in any matter, and they take on particular importance in military aviation. Without these elements the most intelligent judgments, aimed at strengthening discipline, orderly procedure, organization, and increasing efforts to ensure flight safety are meaningless. It is for good reason that V. I. Lenin considered checking and verification of execution to be a most important principle of leadership: "In any 'matter' it is necessary from time to time (once a week, once a month or once every two months, depending on the nature and importance of the matter, and with the element of surprise) to check actual execution. This is a most important and essential thing." This point is entirely valid today as well.

An important role is assigned to party and Komsomol organizations in strengthening discipline, efficiency, follow-through, and unwavering observance of flight safety measures. The district air forces military council has repeatedly submitted for discussion the question of the role of party organizations in further strengthening military discipline and in improving the work style of commanders, political workers, and party committee and bureau secretaries. Preventive measures against violations of military discipline and an

irresponsible or thoughtless attitude toward performance of job duties is one of the most important areas in the activities of party activists. An uncompromising attitude by Communists and Komsomol members toward persons who take unwarranted risks and who are guilty of unnecessary relaxation of demands and situation simplification, a lack of organization and verification is an effective means of campaigning for accident-free flight operations.

This job is being done well in the squadron led by military pilot 1st class Lt Col V. Nikonov. In the last training year personnel achieved excellent results in combat and political training. The command authorities, skillfully relying on party and Komsomol activists, ensured exemplary follow-through and organization. For several years now the squadron has experienced no air mishaps or bad near-accident situations. An excellent level of precision formation flying has been achieved. Assigned tasks are executed with excellent quality. And as a result -- the squadron was named one of the best Air Forces subunits in the district on the basis of socialist competition results.

The CPSU Central Committee decree entitled "On Improving Organization and Practices of Totaling Socialist Competition Results and Rewarding Competition Winners" states that one should seek persistently to ensure that the forms of socialist competition are in conformity with the demands of the time and measures being taken to improve the economic management mechanism. In developing the innovative nature of competition and in choosing forms of competition, one should not permit duplication of effort or an unimaginative approach. One should promptly note, support, and disseminate all useful undertakings and eliminate that which has outlived its usefulness and is economically inexpedient. Conditions of competition and competition results should be clear, precisely defined, focused toward achieving high end results, improving production efficiency, and should promote growth in people's labor activeness.

Our aviation personnel, inspired by the decisions of the November (1982) and June (1983) CPSU Central Committee Plenums, adopted upgraded socialist pledges in the new training year. The efforts of aviation commanders, political workers, staff officers, party and Komsomol organizations of district aviation units and subunits are presently focused on meeting these pledges with honor, totally mastering weapons and combat equipment, comprehensively strengthening discipline, flying without accidents or near-accident situations, and vigilantly guarding our homeland's airspace.

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FAR EAST AIR-GROUND RANGE EXERCISE DESCRIBED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, Dec 83 (signed to press 1 Nov 83) pp 4-5

[Article, published under the heading "For a High Degree of Combat Readiness," by military pilot 2nd class Maj A. Podolyan, AVIATSIYA I KOSMONAVTIKA special correspondent: "Ukhov's Flight Attacks: Report From Aboard a Fighter-Bomber"]

[Text] The pilot pulled the canopy closed and switched on the circuit breakers: Engine start! The starter whine became drowned out by the whine of the turbine as it wound up. The engine gauge needles stood steady at the proper readings. The pilot proceeded to check the aircraft systems.

Studying the fighter-bomber's systems and equipment and being tested on his knowledge lay behind him. He would soon be taking off. Squadron commander Lt Col Yu. Tyumin performed the cockpit procedures with professional precision and dexterity. Today he was giving me a "ride" out to the range. The combat aircraft of Capt A. Ukhov and Sr Lt Yu. Vodolazskiy stood on the concrete ramp to the right of our two-seater. Today they would be making a precision run to the range and would knock out a ground target on the first pass. Aleksey and Yuriy had been preparing painstakingly for this exercise.

Ukhov's 2-aircraft flight would be followed by the two-seater flown by the squadron commander. Not even the slightest imprecision in the actions of his men would escape his alert gaze. In addition, the scenario called for Tyumin to try to impede the flight from accomplishing its mission.

"489, taxiing as a group," Ukhov's voice sounded in my headset.

Sr Lt Tech Serv I. Solozobov and G. Romantsov, and Lt Tech Serv A. Kravchenko stood motionless, pointing in their aircraft's direction of movement. This gesture was like an additional reminder: "No problems, happy landings!"

"We are taxiing," Lieutenant Colonel Tyumin announced over the intercom.

The two-seater rolled onto the taxiway.

When the two aircraft were airborne, we rolled into position on the active. Wing at minimum sweep angle. Run the engine up to maximum rpm.

"Cleared for takeoff!"

That was the tower. The afterburner was applied unusually smoothly, and within a few seconds I could no longer distinguish the joints between the runway slabs. The aircraft was accelerating rapidly. A short takeoff roll -- and the aircraft shot abruptly upward. The gear doors smacked shut, and the flaps came up. We entered our departure turn....

We were flying over taiga-covered coniform mountains. At one time this had been a wild, uninhabited region.... Arsen'yev's Dersu Uzala had led expeditions down these small river valleys, and his striped "amba" had stalked this general area. Today man's presence can be felt everywhere. A well-traveled road loops its way among the hills, and a rail line runs along the horizon off to the right. Communities dot the taiga like scattered white acacia flower clusters. The Far East is toiling for the welfare of the homeland. "The country's first work shift," say the local old-timers. As enterprises in the European part of the Soviet Union are quieting down for the night, the people of the Far East are taking their work stations.

Before me appeared a view I had seen from the air several days previously. Our aircraft was flying above the Sea of Okhotsk. The air was clean and had a transparency. It was hard to believe that this area was often beset by heavy squalls. The Pacific Ocean extended out beyond the Kuril chain, merging with the sky. The little chain of islands, receding off into the distance, seemed to be shielding the mainland from the Pacific's sometimes ferocious breath. Both the sea and ocean were empty. But far out beyond the Kurils I could see a group of vessels against the dark-blue background. It was a foreign aircraft carrier accompanied by escorts. Another "wolf pack" roving close to our territorial waters. What were those foreign warships doing here? What plans were being nurtured by those who sent them here?

The aviators of the Far East perform their difficult job in order for the people of this region to live and work in peace and tranquility. They are ready at all times to take to the air in response to a threat.

"489, first waypoint," Captain Ukhov radioed to his ground controller.

The pair of fighter-bombers executed a turn and proceeded to climb. Yuriy Vodolazskiy precisely maintained formation. It was about to begin....

The pilot advanced the throttle, and our aircraft picked up speed. A vigorous maneuver, and our aircraft, approaching Ukhov's flight from a direction practically abeam, hung motionless for a second above the fighter-bombers. A swing left, followed by an attack pass! But Ukhov and Vodolazskiy were alert. Their aircraft dived under the attacker.

"Good evasion," I heard the lieutenant colonel's voice over the intercom. "We are going to attack from below...."

The G-loading pushed me back into my seat. Our aircraft surged upward in a climbing turn. Now there was no way out for the aircraft under attack. There

they were -- "helplessly suspended" above us. But their helplessness was an illusion. The wingman deployed his speed brakes. The pilot had also most likely throttled back, since our aircraft was beginning to catch up rapidly. This was disadvantageous to Tyumin: it was too late to attack the wingman, and Vodolazskiy would now thwart any attempt to "take" Ukhov.

I could sense that Yuriy Viktorovich was proud of his pupils. He was free to choose any maneuver he wished, but his subordinates were bound by a condition of the mission sortie: not to engage in combat en route, and to attack the target on the range at the designated time. A difficult test for them!

Our aircraft again surged upward.

"489, second waypoint," I heard over the radio.

The air-ground range was getting closer, and Tyumin's chances of keeping his subordinates from accomplishing their mission were steadily diminishing. Tyumin firewalled it. As Ukhov puts it, the lieutenant colonel was beginning to "put on a psych." He was mounting a mock attack from the left rear quadrant. Vodolazskiy, evading the attack, put his aircraft into a climb, in the direction of the attacker. He could "fire" at Ukhov. But then the flight leader "jumped" several hundred meters, into the protection of his wingman's guns.

I could now see why Ukhov and Vodolazskiy had spent so much time yesterday running through anticipated combat tactics. For every move made by their commander they had prepared a countermaneuver which ensured no loss of visual or fire contact between the pair and ensured a steady advance along the flight path with minimal time expended on maneuvering.

This mock combat pitted the commanding officer's skill and experience against the proficiency of his subordinates, multiplied by their daily labor. Yuriy Viktorovich was faced with an interesting situation. On the one hand he wanted to "finish off" the pair of fighter-bombers as quickly as possible, while on the other hand he felt an apprehension: how would the pilots perform in the air? Would they allow themselves to be "taken"? After all, he himself had taught them, had shown them.... Yes, a unique situation!

Tyumin was again about to attack. "We'll try it from below..." his voice, constrained by the G-loading, came through the headset. The aircraft proceeded to dive earthward....

I had on numerous occasions flown in support of fighter-bombers over a mock battlefield. I had flown both cover and strike, but only now was I beginning to understand in full measure how difficult it sometimes is for them to penetrate through to the target.

Captain Ukhov figured out what the squadron commander was intending to do: the fighter-bombers proceeded to descend, picking up speed and, preventing our aircraft from getting close enough to deliver effective fire, proceeded at low level. Now they could not be attacked from below.

Merging into the grayish mist, the taiga rushed past under our wing at break-neck speed. It seemed that a great deal of time had passed, but the cockpit clock impassively showed that the flight had been in progress for slightly more than 10 minutes.

The range was getting closer. Up ahead I could see the shoreline of a lake. From here it was a stone's throw to the target range.

Our aircraft was again above the fighter-bombers. The next pass was without success. The intended victims evaded the attack with a vigorous maneuver. We immediately heard over the radio Captain Ukhov's clear, excited voice: "489, 2-aircraft element approaching range, course.... Altitude...."

"Cleared to range," the range controller replied. "Your target is 100."

Lieutenant Colonel Tyumin once again took an advantageous attack position. The "cat-and-mouse game," as Yuriy Vodolazskiy later characterized this flight, continued. The squadron commander is a military pilot-expert marksman. In the opinion of his superiors, he is one of the regiment's best combat pilots. But right now he had met his match. He was going up against pilots he himself had trained. Did this bother the lieutenant colonel? No, judging from all indications. The labor he had expended on the ground had not been in vain. These were its results. They could not be more graphic. Flight commander Capt Aleksey Ukhov was unwaveringly leading his wingman toward the range, and the more experienced pilot was at the moment unable to stop them.

"The bugger won't back off..." Tyumin muttered to himself. I could hear in his voice both a certain amount of surprise and deep satisfaction with his men's performance. Indeed, these boys would not back off! While modest and even shy on the ground, they bow to no man in combat. Their every effort pursued a single aim: to accomplish the mission as effectively as possible with minimum expenditure. It is precisely during such seconds, compressed by the tension of combat, that the finest qualities of combat pilots are revealed: boldness, calculated risk, daring and persistence in achieving the stated objective. Only a highly-trained pilot, a knowledgeable tactician, who has a total mastery of his aircraft and is familiar with the strong and weak points of the adversary is capable of instantly grasping the adversary's intentions and thwarting his plans, by aggressive actions imposing his own will on the adversary. Air combat rarely ends in a draw. Special laws apply here, to which lieutenants and field marshals are equally subject. Two criteria are applicable in rating flying skill: either you win, or are defeated.

As I noted, the pilots in Lt Col Yu. Tyumin's squadron are well aware of this fact. In order to achieve high-quality accomplishment of their mission, they spend long hours bent over textbooks and instruction manuals, hone already acquired and develop new techniques of modern combat; the simulators in the training building are humming from dawn to dark for the sake of future victories.

The fighter-bombers were approaching the range. After passing this point, like it or not, they would have to gain altitude in order to identify targets

and make the correct maneuver decision. Lieutenant Colonel Tyumin decided once again to "trip up" the pilots at this point. Once again we felt the pressure of a heavy G-loading; our aircraft made a hard climbing turn and "hovered" above and to the right of the fighter-bombers.

What would Ukhov's response be? The target range was to his left; he had to execute a left turn to initiate a run on the target. Tyumin was counting on this. But Ukhov and Vodolazskiy were also aware of the situation. Afterburners cutting in, the fighter-bombers, "clipping" the turn, proceeded to head toward our aircraft. Now the pupils were trying to "psych out" Tyumin, employing his own tactic. His only recourse was to pull away. A second later the pilots switched off their afterburners, vigorously banked their aircraft back and went into a dive.

"489, pair on target run, target visual contact," came Ukhov's pleased voice over the radio.

"I have you in sight, cleared to attack," the range controller replied.

Streamers of smoke shot like arrows from the fighter-bombers to the range surface -- a flood of rockets pummeled the target. Smoke and flames raged around Target 100. Mission accomplished! Nonstandard radio terminology uttered by Lieutenant Colonel Tyumin rang out over the air, seeming to overtake the flaming rocket projectiles: "Attaboy!"

Yuriy Viktorovich, a reserved individual of few words, this time could not keep from uttering words of praise. Ten seconds later our aircraft passed above the burning target. We could see shapeless lumps of metal among the flames, as well as burning wheels scattered left and right by the explosion.

We headed straight for the other two aircraft and joined formation; the three fighter-bombers headed back toward the base. We tuned to the tower frequency. From time to time we could hear pilots reporting back to the tower. The airfield was busy as usual.

The trip home always feels shorter. Distance is perceived not by the concept of "how far we have gone" but by "how much is left." The runway came into sight.

"Break formation!" ordered Captain Ukhov.

The aircraft, holding a standard-bank turn, entered the downwind leg one after the other.

We taxied to the ramp. We raised the cockpit canopies, and a pleasant, refreshing breeze greeted us. The flight was over. Senior Lieutenant Solozobov climbed up the stepladder: "How did the aircraft perform?"

"Like your Moscow," Lieutenant Colonel Tyumin replied cheerfully. "Everything in its proper place and everything fine."

Igor' Solozobov is a Muscovite and was quite pleased with the comparison. He dexterously inserted the ejection seat restraining pins. A moment later we climbed down onto the concrete ramp.

Ukhov and Vodolazskiy walked up: "Comrade commander, how did we do?"

"You did well," replied Tyumin, "but...."

He began a meticulous, detailed analysis of the sortie, phase by phase. This was a professional discussion among individuals who are totally dedicated to a common cause.

Somewhat later, replying to the question of why he was pleased with the sortie (after all, he had failed to impede mission execution), Yuriy Viktorovich slowly replied: "They got away from me, and that means they will be able to get away from a great many others. And that is the main thing! It turns out that my teaching has had results."

Standing behind the fuselage to shield themselves from the wind, the pilots were once again "flying," repeating with their hands the maneuvers they had executed in the air. Looking at them, I thought to myself: "These boys are doing a good job. Such people, regardless of conditions, will keep our Far Eastern skies under firm lock and key!"

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NEW CO MAKES PROBLEM SQUADRON SHAPE UP

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, Dec 83 (signed to press 1 Nov 83) pp 6-7

[Article, published under the heading "For a High Degree of Combat Readiness," by military pilot 1st class Lt Col V. Grigor'yev: "Commander's Position"]

[Text] When announcing competition results, the higher commander named as best in the combined unit a subunit in the performance of which substantial errors of omission had been noted at fairly recent date. Its new rating was entirely deserved. A healthy moral microclimate had become established in the squadron, instances of gross violations of military discipline had been eliminated, personnel activeness and efficiency had improved, and proper relationships and attitudes had been established among the men. The aviators had begun performing assigned tasks successfully and with excellent quality.

The changes for the better began with arrival in the squadron by Lt Col V. Nikonov, a vigorous, demanding, and hardworking commander. Utilizing available possibilities and existing capabilities, the squadron commander quickly succeeded in bringing the lagging subunit up among the performance leaders. I see the reason for this success primarily in the fact that the new commander has a serious attitude toward the assigned task, clearly sees the end objective, and has the ability to organize his men for unconditional accomplishment of the tasks assigned to the subunit.

Regulations state that a commander shall firmly and consistently implement policy of the Communist Party and Soviet Government and shall be an organizer and leader of training and indoctrination of his men. Precisely this became the main, determining component in the activities of Lt Col V. Nikonov. He approached appraisal of the subunit's achievements and deficiencies from a position of strong demandingness and with consideration of the interests of combat readiness. This made it possible to see errors in the training and indoctrination of his men and in maintaining military discipline.

Lt Col V. Nikonov is distinguished by precision and logic of thought process, has a good understanding of aerodynamics, fighter-bomber tactics, combat employment, and performance characteristics, and has his own views on training and indoctrination methods. He also has considerable practical life experience.

Prior to entering the military, Nikonov was employed as a sheet-metal worker-assembler at a factory in Ryazan and was receiving training at that city's flying club. Later he was enrolled as an external student and graduated from the Kharkov Higher Military Aviation School for Pilots. During his tours of duty in various Air Forces units, he logged more than 2,000 hours and became rated on aircraft of several types. He twice received an early rank promotion for his successful performance in combat and political training. This officer has been awarded the Order "For Service to the Homeland in the USSR Armed Forces," 3rd and 2nd class.

A great deal is concentrated in this meager biographical data, first and foremost this officer's attitude toward his assigned task -- conscientious performance of military duty, right-mindedness, and strict demandingness.

Just before Lieutenant Colonel Nikonov was given this squadron commander assignment, he was told that it was a lagging subunit. At the most recent tactical air exercise, squadron personnel had barely met performance standards. The officers who had temporarily served as acting squadron commander had not shown an adequate feeling of responsibility toward the job. Nikonov did not proceed to give assurances that he would shape things up immediately, but one could sense in his acceptance of the duty assignment confidence in his own ability.

The new squadron commander spent the first few days carefully studying his men. He endeavored to dig into the reasons behind each violation of military discipline and poor quality of flight assignment execution, and he closely scrutinized the men, but he did not hasten to reach conclusions.

At the next tactical air exercise the squadron was assigned the mission of sending a group of aircraft to strike small ground targets. Lieutenant Colonel Nikonov assembled his deputies and briefed them on the general plan of the tactical air exercise and the tactical situation. He realized that his own degree of authority and subsequent work with the subunit would depend in large measure on how the squadron accomplished its mission and what role he would play in this. The commander carefully checked and verified the flight operations preparation schedule, discussed it with his deputies, and made emendations. After he was sure that all suggestions and comments had been considered, he presented it to the unit commander for his approval.

Preparations for the tactical air exercise commenced. Assigning specific tasks to his flight commanders, engineers and technicians, the squadron commander himself also set to work. At the time many already noted that Vladimir Grigor'yevich was using charts and measuring grids of his own design in laying out routes and calculating maneuvers, and that this was greatly reducing preliminary preparation time. Nobody else in the squadron had yet reported ready for flight operations, but he already had a precise model in several variations.

The squadron commander discovered in testing his men that some of the squadron's pilots had prepared in a superficial manner and were unable to give a precise, exhaustive answer to questions. This was a result, on the one hand, of

inadequate demandingness on the part of their immediate superiors, and on the other hand it resulted from a passive attitude on the part of the pilots, especially those who had achieved a certain level of professional skill; they had the attitude that they knew everything, that there was nothing new to learn.

Measures had to be taken. The regimental command approved of and supported the squadron commander's high level of demandingness. The unit party organization greatly assisted in ensuring observance of regulations.

On the day of the tactical air exercise the group led by Lieutenant Colonel Nikonov reached the target area precisely at the designated time. The leader spotted it first. Executing a maneuver which had been devised in advance, he delivered an accurate rocket [or: missile] strike on the first pass. The others followed his example.

At the debriefing and critique the squadron commander thoroughly analyzed the performance of each pilot, noted positive points, indicated errors and miscalculations, and gave advice on how to correct them. The squadron commander's high degree of professionalism and personal expertise drew the aviators' attention.

In some military units it would seem that relations develop according to the principle of you do something for me and I will do something for you. Let us say that a display stand is to be set up, a classroom equipped, or an auxiliary structure built. Some commanding officers promise a reward if it is accomplished on schedule. This is precisely the way things frequently occurred in the squadron in the past. Lieutenant Colonel Nikonov realized that this had a pernicious effect on the men's psychology. It was necessary resolutely to combat this state of affairs.

The squadron commander spoke with his men, determined their attitude toward military service, studied the men's mood and interests, and inquired into problems pertaining to their daily lives. The overwhelming majority of aviation personnel were disturbed by the unsatisfactory state of affairs in the subunit and desired exemplary observance of regulations. But there was also an element of inertia. His deputy commander, for example, receiving a comment or suggestion, would reply: "Yes sir," but would display no initiative in carrying out instructions.

On one occasion Nikonov, checking his officers' flight documentation, drew Maj V. Gapchinskiy's attention to the fact that the log recording errors made by flight personnel was being kept in a careless manner. A few days later he checked to see what had been done. The situation had not changed. There were also plenty of complaints about the executive officer, Maj V. Gudkov. He frequently only superficially checked the quality of preparation by personnel to stand duty. This officer also had some discipline problems: he might simply walk away from his work station without warning and remain away for some time. Both were put on report, and a serious, frank and firm talk was held with them. Now Majors Gapchinskiy and Gudkov are a model of execution of military duty. And they are amazed that they had previously had a different attitude toward their job duties.

A firm position taken by a commander presupposes professional competence, a high degree of flying expertise, conscientiousness in all things, firmness and a high degree of demandingness on oneself and one's subordinates. But in my opinion the most important thing is the ability clearly to see the future, to work with people, to assign them tasks in a precise and specific manner, and to lead them by personal example. Nobody is guaranteed against making mistakes, and it is very important to understand one's mistakes, to determine their causes and to correct them.

Once Capt S. Alekseyevich failed to release a bomb at the range and returned to base with it. This is essentially failure to carry out a mission sortie assignment. The squadron commander made a thorough inquiry into the incident. The following had occurred. The pilot was to take up a backup aircraft. Since he was already working behind schedule, he was unable properly to prepare for the mission and did not properly execute all mission elements. In addition the ground crewmen who had readied the aircraft for the mission had failed properly to set up the ordnance release mechanisms, and the pilot could not handle the problem when he was over the range. Of course it is important to establish the actual degree of culpability of each individual. But it is much more important to work with the men in such a manner as to correct their training deficiencies and their less-than-serious attitude toward their duties.

Party and Komsomol organizations played a role. A frank and firm discussion was conducted at party and Komsomol meetings on the personal responsibility of aviation personnel and on the state of combat training of each individual and the subunit as a whole.

In his daily activities Lieutenant Colonel Nikonov placed principal emphasis on indoctrination of the indoctrinators -- the squadron deputy commanders, the flight commanders, the technical group chiefs -- on boosting the level of their ideological conditioning and occupational training, as well as on organization of competition in the squadron.

Particular attention had to be focused on the flight commanded by Capt A. Kuzin, whose pilots would be handling what for them was a new assignment. The squadron commander did not rest until he was convinced that each and every combat pilot understood and was thoroughly aware of what was demanded of him. As a result the flight did an excellent job. Lieutenant Colonel Nikonov demands of his deputies a like approach to things.

At a recent tactical air exercise the squadron's pilots displayed excellent flying precision, combat skill, organization, and discipline. The combat pilots accomplished their assigned missions with high marks, flying in adverse weather, in groups and singly, in a situation closely approximating actual combat.

Today all squadron pilots are rated first class, and 60 percent of the technicians and junior aviation specialists have high proficiency ratings; most of the men are category-rated athletes and Military Sports Complex badge-holders, and three fourths of the squadron's aircraft are excellent-rated.

As we know, replacement of leader personnel is a continuously ongoing process. And the matter of leader personnel selection, placement, and indoctrination has been, is now, and will continue to be one of the most important issues, especially as regards matters pertaining to subunit combat readiness, excellent moral-psychological staunchness and professional skill of personnel. Experience indicates that high-minded, conscientious work by commanders, who proceed in their actions from the demands of military regulations, party documents, the orders and instructions of their superiors, is a main condition for achieving substantial success in combat and political training, flawless performance by personnel of their duty to the homeland, and strong consolidation in the consciousness of aviation personnel of the ideas of Soviet patriotism and proletarian internationalism.

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INDIVIDUAL PERFORMANCE IMPROVEMENT PLAN APPRAISED

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[Article, published under the heading "Implementing the Decisions of the 26th CPSU Congress," by military pilot-expert marksman Gds Col I. Artyushenkov, aviation regiment commander, and Lt Col V. Basok: "Behind the Line of the Individual Plan...."]

[Text] Green flares soared skyward. The thunderous roar of a fighter-bomber taking off with afterburner lit rolled across the airfield. Soon the gray dot that was the aircraft disappeared in the distance, dissolving in the dark-blue abyss. A target reconnaissance aircraft had departed on a mission. A tactical air exercise had commenced in the squadron under the command of Gds Lt Col V. Ryabinin.

Some time later the reconnaissance aircraft radioed back to the command post: "Target obscured by cloud cover. Difficult to operate visually!"

The squadron commander thought for a moment, but then stated firmly: "Everything will go on schedule!"

A 2-aircraft flight of fighter-bombers, led by Gds Capt V. Derevyanko, took to the air. According to the commander's plan, these aircraft would be knocking out an "aggressor" control and warning center. As a rule such a target is well camouflaged and concealed and is difficult to spot from the air even with good visibility, and on this occasion the "aggressor" was being additionally assisted by the weather. It appeared that a visual attack was out of the question. The squadron commander, however, thought otherwise. He had sent out to perform this difficult mission a flight led by Gds Capt V. Derevyanko, because he had faith in the pilots' skill and the capabilities of their aircraft.

He had good reason for this faith. Derevyanko and his wingman precisely followed the specified route, combining maneuver and jamming, successfully penetrated the "aggressor's" heavy air defense and, out of visual contact with the target, delivered a precision strike on it. The mock combat mission was accomplished. Other aircrews taking off after Derevyanko's flight also hit their targets.

This was how one of the squadron's tactical air exercises ended during this past training year. In spite of fatigue, the aviators felt satisfaction from awareness of duty fulfilled, from productive labor. The squadron commander, Gds Lt Col V. Ryabinin, his deputy commander for political affairs, Gds Maj I. Shapyrin, and party bureau secretary Gds Maj M. Kolmogorov also had plenty of reason to rejoice together with the men at their fine showing. Party-political influence on subunit personnel was continuous during the course of the exercise, as had been planned prior to the exercise.

Practical experience irrefutably attests to the fact that wherever matters of training and indoctrination of aviation personnel are handled in a thoughtful, integrated manner, taking today's demands into account and fully encompassing all categories of personnel, with utilization of diversified forms of influencing personnel, success is achieved without fail. It is not surprising that in the new training year party members are devoting considerable attention to developing excellent moral-psychological and fighting qualities in aviation personnel. An important role in this is played by individual plans for raising one's ideological-theoretical and methodological level and professional growth of officer personnel. Everybody has such plans.

Take, for example, one of the sections of the plan of squadron commander Guards Lieutenant Colonel Ryabinin: influencing flight proficiency of subordinates and developing in them the ability to accomplish mock combat missions in all weather, day or night. The squadron commander's confidence that in the exercise the 2-aircraft flight led by Gds Capt V. Derevyanko would successfully accomplish its bombing mission without visual contact with the target, for example, is directly linked to his individual plan. When the squadron commander was just commencing to draw up his plan, he summoned the squadron political worker and party bureau secretary. They conferred on what forms and methods should be employed for teaching and indoctrinating the flight commanders and all squadron pilots. They also determined what Shapyrin and Kolmogorov should reflect in their plans. The result was a unique distribution of manpower, but Ryabinin naturally assigned himself more difficult personnel indoctrination tasks.

One must admit that at the time things did not always go as well in the squadron as one would have liked. From time to time aviation personnel would commit significant errors in the performance of combat training sorties at the range. In these cases the pilots would justify their actions with the statement that they had done everything as they had been taught, but the bomb had been an over or a short. The implication was that the automatic control devices were to blame rather than the pilot. But combat aircraft aiming and navigation systems are entirely reliable, which has been practically confirmed time and again. The aircraft itself is another thing. Just as people, it has its peculiarities, its character, if one may use that term. Pilots are well aware that aircraft behave differently in the air, with each aircraft differing from the others, even if in a minor way. In short, the squadron commander was faced with a number of questions at that time, resolution of which was also reflected in part in his own individual plan.

For example, one of the points in the section dealing with professional training was formulated as follows: statistics on quality of bombing by each pilot

and each aircraft were to be utilized to increase knowledge of the aircraft equipment and personnel. The squadron commander collected on each aircraft radial and azimuthal errors in bombing runs on the range. We should note that such figures have been kept in the past, but records were sporadic. For example, pilots would fly to the bombing range, make their target runs, record bomb impact data in radius and azimuth, and they would be graded on this basis. Correct procedure. Then these records would be destroyed on the ground that they were no longer needed. Data fed into the aiming-navigation system experienced the same fate.

Other questions also arose with the squadron commander, resolution of which he incorporated into his plan. I do not believe that there is a need to enumerate all of them, and we should also state that the individual plan for party member Ryabinin of course could not include the entire aggregate of commander problems. We shall state only that analysis of these statistics and thorough study of aviation personnel combat training and aircraft operation substantially assisted the squadron commander in improving the quality of aircrew weapons proficiency. The pilots also gained faith in the high degree of reliability of the aiming and navigation equipment.

Here is another important detail. Now flight personnel and ground crewmen in the squadron are quite familiar with the "character" of each aircraft and with what it is capable of accomplishing, as it were. And it turns out that these "characters" vary. For example, knowing in advance the specific peculiarities of an aircraft and the pilot's capabilities, knowing when he needs assistance and what kind of assistance, in the final analysis one can obtain a high level of job performance from him. This formed the basis of Guards Lieutenant Colonel Ryabinin's firm confidence when he made the decision to send out the aircrews to deliver the strike in the absence of visual contact with the target.

Let us take other items in the squadron commander's individual plan, such as influence on improving the methods skills and ideological indoctrination work of flight commanders. Of course this is part of the squadron commander's job, and Ryabinin, just as other commanders, performs his duties conscientiously. But it is one thing to do this work daily with all personnel, and another thing altogether to work with a specific individual, according to a specific plan, implementation of which is rigorously monitored.

Flight commander Gds Capt V. Derevyanko, for example, possesses considerable experience in indoctrination work. In the past, however, he has experienced difficulties connected with indoctrinating and instructing his men. Guards Lieutenant Colonel Ryabinin promptly noticed this. In particular, at times Derevyanko would lose his composure in front of his men, which would hinder his work effort and sometimes fail to produce the desired results. Nor did he have that kindness which people always need. In short, a deficiency of cordial relations had a direct effect on the men's mood, and their mood affected their job performance. The squadron commander relied on the party organization in helping this flight commander correct his errors. Party members received an accountability report by Derevyanko at a meeting of the party bureau and stated to him a number of critical comments and suggestions both regarding his personal ideological-theoretical growth and political indoctrination work with subordinates. In addition, Guards Majors Shapyrin and Kolmogorov had a considerable discussion with Derevyanko on these matters.

The matter of improving an officer's methods skills was also being addressed. Once Gds Capt V. Bakhmutov failed to follow proper landing procedures. This was not a chance or random occurrence, as the mistake was repeated more than once. The flight commander determined the cause -- the pilot was incorrectly distributing his attention during the landing approach. But what was the specific error? Where was the pilot looking at what moment during this phase of the landing approach? The flight commander could not give an answer to these questions by Guards Lieutenant Colonel Ryabinin.

Then the squadron commander advised Derevyanko to analyze Bakhmutov's actions second by second from roundout to touchdown. It was determined that he was looking close to the aircraft. They had found the weak point in this pilot's training. Soon Guards Captain Bakhmutov had corrected his error.

The squadron commander also helped Guards Captain Derevyanko master such items as attacking air targets, precision formation flying, etc. All of the squadron commander's efforts aimed at increasing the flight commander's methods skill also had a direct effect on the pilots.

Gds Sr Lt V. Polyakov was assigned to the flight. He is now a 1st-class military pilot and a disciplined officer. At first, however, Polyakov sometimes took liberties in performing flight training drills and showed a disinclination to follow those procedures which had been adopted in the squadron. In short, his discipline left much to be desired. Initially individual talks with him by the flight commander failed to produce results. After one such incident the squadron commander assembled the pilots. Each man expressed his opinion. The conclusion reached by the assembled company was explicit: he was losing the confidence of his fellow pilots. At this point Polyakov realized that in this collective he would be given no quarter: they were all serving a common important cause, and therefore they would not tolerate anybody marching to his own tune. Thus indoctrination work and rigorous demandingness by command personnel for high quality of performance had an effect.

Gds Lt Col V. Ryabinin's individual plan contains a section on increasing effectiveness of political indoctrination work and the campaign to strengthen military discipline in the subunit. As the squadron commander notes, the basis for achieving the goals in this section is continuous analysis of the state of affairs in the squadron as well as thorough, comprehensive study of subordinates. This is why the squadron commander works particularly persistently with aviation personnel who are guilty of various deviations in performance of their duties.

Take, for example, aircraft ground technicians Gds Sr Lt Tech Serv A. Babikov and Gds Lt Tech Serv V. Kokunov. These officers are currently doing a good job. Babikov earned the highest proficiency rating of "master," and his aircraft is rated excellent. In the past, however, both officers were known to violate discipline. The squadron commander proceeded to keep an eye on them. He spoke individually with each of them and also utilized other forms of influence, such as meetings of officers and party members. Gradually these young officers realized that they simply would not be permitted to perform as they had been performing.

We could cite a great many examples of that assistance which is given to flight commanders, maintenance group chiefs and all aviation personnel by individual plans for increasing ideological-theoretical expertise, job skills, and military knowledgeability. In implementing these plans, commanders work together with party organizations, utilizing effective means of influencing people, and seek to ensure that aviation personnel gain an increased desire to make every effort to boost successes in combat and political training and in socialist competition. Stated more precisely, the work done by each party organization is grounded on concern primarily for growth in the personal exemplariness of Communists in performance of duty and combat training.

We have many party members of whom the entire collective is proud. They include V. Tolokonnikov, V. Pitomets, A. Bescherevnykh, V. Borsukov, and many others. By their own example they inspire their comrades to accomplish the complex tasks facing the subunit and the regiment as a whole. Therefore it would be no exaggeration to state that party members are the pacesetters in the search for reserve potential for increasing successes in flying activities. Party organizations use all work forms and methods to influence personnel and give considerable assistance to commanders in indoctrinating and instructing aviation personnel.

In conclusion we should like to note two items. First of all, the individual plan for boosting the ideological-theoretical level and increasing the military knowledgeability of each officer should be continuously upgraded with new tasks dictated by military affairs. Rigorous verification of execution is necessary. Secondly, the desired success can be achieved only with a combined approach. We Communists are focused precisely toward this goal by the decisions of the 26th CPSU Congress and demands of the June (1983) CPSU Central Committee Plenum.

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GENERAL BELONOZHKO URGES ALL-OUT ECONOMY EFFORT

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, Dec 83 (signed to press 1 Nov 83) pp 10-12

[Article, published under the heading "Discussion of the Article 'Has Reserve Potential Been Exhausted?'," by Honored Military Pilot USSR Col Gen Avn Petr Ivanovich Belonozhko, first deputy chief of Air Forces Main Staff: "On the Pulse of Time"]

[Text] "The Politburo has considered and continues to consider giving everything necessary to the Army and Navy a mandatory thing, especially in the present international situation."

From speech by CPSU Central Committee General Secretary Comrade Yu. V. Andropov at the November (1982) CPSU Central Committee Plenum

An extensive program for all-out improvement of the economy of developed socialism was advanced at the 26th Congress of the Communist Party of the Soviet Union. The decisions at this party forum were further developed at the November (1982) and June (1983) CPSU Central Committee Plenums. Guided by the statement by CPSU Central Committee General Secretary Comrade Yu. V. Andropov that today economy and a conscientious attitude toward our nation's assets is a question of the practicability of our plans, Soviet citizens, by hard work in the third, core year of the 11th Five-Year Plan, have made a substantial contribution toward implementation of the specified programs.

An extensive campaign is in progress for economy and thrift in Air Forces units and subunits. Thanks to the efforts of commanders, staffs and political agencies, party and Komsomol organizations, hundreds of thousands of rubles and many tons of fuel and lubricants have been saved. The time required to deliver ordnance to aircraft on the flight line has been substantially reduced. Airfields and maintenance facilities are maintained at a high state of readiness. Living conditions for flight personnel, engineers and technicians have recently experienced considerable improvement. More and more housing is available. Services and amenities are improving, and increased efforts are being made to maintain air bases in exemplary order and to provide garrison personnel and the families of military personnel with everything they need.

In this connection a lively response was evoked on the part of aviation personnel by an article by unit commander Lt Col V. Kroshka entitled "Has Reserve Potential Been Exhausted?" (AVIATSIYA I KOSMONAVTIKA, No 2, 1983), which prompted a detailed discussion in this journal on problems connected with tasks of economizing in the military. Responses by Engr-Lt Col V. Dorofeyev ("Kilograms Add Up to a Ton"), Maj Gen Intend Serv S. Glamazda ("Economics Work in Units"), Lt Col N. Minakov ("With Care and Good Management"), and others raise important questions pertaining to thrift and a conscientious attitude toward public property, present certain experience in maintenance and combat employment of modern aviation systems, and show ways and reserve potential for achieving additional improvement in the combat readiness of units and subunits. The authors are unanimous in their view that economy is possible only when personnel know their job thoroughly, have the ability knowledgeably to service and maintain combat equipment and fully to utilize its performance capabilities. The current relevancy and advisability of discussing the issue that the economy should be economical were noted in a review of journals in the 9 September 1983 issue of the newspaper KRASNAYA ZVEZDA, under the title "Aggressively Disseminate Advanced Know-How."

Practical realities convincingly demonstrate that in order to economize wisely, it is essential to possess not only certain knowledge of economics but also to possess a thorough awareness of the extent of tasks to be accomplished in one's assigned work sector. As we know, today our aircraft equipment is fully in conformity with the demands of the time. The Soviet Air Forces possess all-weather aircraft systems capable of destroying an aggressor at maximum range and within a broad range of altitudes, in any weather, night or day. One of our principal tasks is to ensure full utilization of their combat, tactical, and maneuver capabilities and conscientiously to service, maintain, and preserve our equipment.

It is an imperative demand of the times to embark upon an extensive campaign for economy and efficiency of utilization of material and monetary resources and to improve standards of resource consumption in the military.

Intensification of economy regime means not only a thrifty attitude toward various servicing and maintenance supplies, spare equipment and instrumentation. It also means a genuinely stewardly attitude toward utilization of fixed assets, material goods, each and every ruble invested toward further increasing the combat readiness of units and subunits, each and every hour of on-duty time. In an international situation which has become aggravated through the fault of the United States, the goal is to resolve as quickly as possible problems pertaining to the full and comprehensive utilization of technological resources and as yet unmobilized reserve potential and capabilities for economizing in the military. This is particularly important since considerable capital investment has been made during the years of the 11th Five-Year Plan to improve this country's defense capability and strengthen the USSR Armed Forces.

Maj Gen Intend Serv S. Glamazda correctly notes in his article "Economics Work in Units" (AVIATSIYA I KOSMONAVTIKA, No 4, 1983) that Air Forces units are provided in full measure each year with those financial and material resources needed for effective and high-quality performance of their assigned missions.

In recent years there has been a substantial strengthening and expansion of combat training facilities. Military personnel living standards are improving year by year.

Considerable work is being done in the military to find additional sources, capabilities and reserve potential in order more fully to meet combat training needs. Commanders, staffs, political agencies, party and Komsomol organizations are devoting due attention to this. The article's author correctly notes that economizing in material and monetary resources in military units should not be restricted to the framework of budget appropriation expenditures. A most important part of this overall effort consists in extending the service life of aircraft and weapons, simulators and trucks, and maintaining airfields and airfield structures, service buildings, housing and cultural-services facilities in an exemplary condition. At the same time preserving socialist property and further expansion of economics work are inconceivable without adopting proper discipline and procedures in daily military life, without strict observance of military discipline, rule of law and legal order.

CPSU Central Committee General Secretary Yu. V. Andropov stressed in his speech at the November (1982) CPSU Central Committee Plenum: "I should like to draw your attention, comrades, to the fact that the question of economizing in material resources should today be addressed in a new manner, not with the attitude: 'If you achieved savings, fine; if you did not, that is also fine'."

A solid foundation for further progress with the campaign for thrift and economy has been laid down in this party approach to solving the problem. This thought runs through all responses to the article "Has Reserve Potential Been Exhausted?" Indeed, precisely stating this task, assigning a specific amount of economics work to each individual, and mobilizing people for conscientious accomplishment of the task is only one aspect of the matter. Another, no less important aspect involves constant and continuous verification of progress in its embodiment, seeking to ensure that each and every person in a position of authority is aware of the specific state of affairs and, if necessary, could immediately assist executing personnel.

This statement of the issue disciplines people and at the same time does not fetter their initiative and independence in efforts to economize. They work not out of fear but out of conscience. Diligence becomes the standard of conduct.

An aircraft is correctly called a crew-served weapon. There are no secondary items in servicing and maintaining an aircraft and in readying it for flight operations. Everything is important and critical to an equal degree. This especially applies to planning and scheduling. Only precision planning and scheduling can achieve a substantial reduction in fuel consumption. Interesting, practical suggestions on this score were made by Engr-Lt Col V. Dorofeyev in his article "Kilograms Add Up to a Ton" (AVIATSIYA I KOSMONAVTIKA, No 3, 1983). The mathematical calculations which he proposes enable one to determine actual fuel savings from reducing unnecessary engine operation in taxiing and on the ramp. In fact, considerable savings in fuel and engine operating time can be achieved just by improving flight operations scheduling and ensuring timely engine start-up, prompt and timely taxiing between maintenance and flight line,

flight line and active, as well as reducing waiting time for takeoff clearance. In addition, besides savings in fuel and lubricants, reduction in engine operating time on the ground will reduce noise and air pollution at and around the airfield, which is also important for protecting the natural environment.

The calculations for all Air Forces units and subunits contained in the response by Engr-Lt Col V. Dorofeyev produce impressive results. It is a pity that as yet not all commanders, deputy commanders, party and Komsomol organizations are conducting effective indoctrination work on matters of economy, while some specialists are simply ignoring it. Miscalculations are especially appreciable wherever commanders fail precisely to determine engine idling time prior to takeoff and where aviation engineer service officers fail adequately to monitor observance of rules and regulations governing preparation, servicing and maintenance of aircraft.

The observations and thoughts presented by Comrade V. Dorofeyev are further developed by military pilot 1st class Lt Col V. Shishkin in an article entitled "Economics of Flying Time" (AVIATSIYA I KOSMONAVTIKA, No 9, 1983). The author stresses that fuel can be saved not only on the ground but in the air as well. He presents an interesting example confirming this statement. Senior flight technician Capt Tech Serv V. Lazarev devised a unique method of calculating minimum per-kilometer fuel consumption. Employment of this method, with consideration and selection of the most favorable engine operating conditions, can save up to 2 tons of aviation fuel in a single full-range flight.

The author quite correctly emphasizes that a great deal in ensuring smooth flight operations scheduling depends on the tower controller team and the aircrews involved. With intensive multiple flight operations around the airfield, if a single aircrew fails to adhere to the prescribed conditions of its flight or deviates from route, an excessive number of aircraft waiting to be landing-sequenced will lead to go-arounds and will make things harder for the tower controllers.

Experience indicates that some flight operations officers do not have aircraft standing around idle on the ground, while others do. When analyzing such phenomena, one inevitably encounters instances of unnecessary relaxation of discipline, predictable routine in organizing flight training, lack of composure and a poor sense of responsibility on the part of certain members of the tower controller team. We would like particularly to emphasize that if there are inexactitudes in a flight operations schedule, problems in flight operations shifts are inevitable. All this is nothing other than omissions in efforts to economize, which lead to unwarranted equipment operating time, expenditure of fuel and lubricants, and waste of valuable training time. It is important that persons who plan and schedule air transport operations by Military Transport Aviation aircraft consider possibilities of obtaining aircraft loadings not only to the destination but on the return flight as well.

Intensification of economy regimen is an important means in the campaign for exemplary maintenance of fixed-wing and rotary-wing airborne systems and weapons. Stretching the service life of, let us say, prime movers, rotary snowplows, bulldozers, trucks and other vehicles in the independent airfield

technical maintenance battalion, communications and electronic equipment in signal and electronics maintenance units by just 1 percent in all air forces will make it possible to save a considerable amount in the Ministry of Defense budget. For this reason command authorities, party, trade union, and Komsomol organizations must address matters of economy not on an occasional basis but in a regular and systematic manner.

Socialist competition should become an effective tool in the hands of command personnel in this noble cause. The better it is organized, the greater is its effectiveness. A vital activity does not tolerate attention to form with consequent detriment to content, red tape, or artificially inflated financial accounting.

The CPSU Central Committee decree entitled "On Improving Organization and Review of Socialist Competition and Rewarding Competition Winners" stresses that it is necessary more extensively to utilize the indoctrinal force of competition, to establish in every collective an atmosphere of strong innovative activeness, demandingness, and discipline, economic and organizational conditions which would stimulate high-quality, productive, conscientious labor, initiative and individual responsibility.

Proceeding from these points, every commander and political worker is called upon promptly to disseminate advanced know-how, to adopt it across the board, utilizing meetings of personnel, wall newspapers, local radio broadcasts, photo bulletins, and other means of visual propaganda.

Some of the forms of such work are cited in an article by Col N. Minakov, commander of a signal regiment, entitled "With Care and Good Management" (AVIATSIYA I KOSMONAVTIKA, No 5, 1983). Relating how advanced know-how is disseminated in the unit, the author stresses that being thrifty means searching for directions which enable one promptly to find the right way to solve an economics problem with minimal expenditure of manpower and resources. The regiment's party members inspire the signal troops by personal example rigorously to observe an economy regimen and to carry out the party's demands: to preserve and augment public, socialist property -- the basis of the might and prosperity of the Soviet homeland.

Working in the subunits, party committee members regularly analyze progress in the campaign for economy and a thrifty attitude toward military property. These matters continuously occupy the center of attention of volunteer oversight groups and posts. Volunteer inspectors regularly make inspections to check the quality of equipment servicing and maintenance, the condition of spare equipment and test instruments, check consumption of electricity, fuel and lubricants. Upon discovering deficiencies, they immediately take steps to correct them, and successes are immediately announced to all personnel. Such a handling of the problem merits strong approval.

As regards extending equipment time between overhauls, it is necessary to be maximally alert. That which is acceptable for ground equipment in this regard, for example, is not always possible in aircraft servicing and maintenance. All replacements of aircraft parts and components, preventive maintenance

inspections, and servicing operations should be performed in strict conformity with current guideline documents. One should not economize wherever such economizing may result in substantial losses.

At the same time one should note that in air units there are many possibilities for extending the life of powerplants and aircraft systems. They consist first and foremost in rigorous observance of proper procedures of equipment operation on the ground and in the air and in strict observance of specified flight operating conditions. This in turn makes it possible to economize in aviation fuel consumption. Or, let us say, an engine has considerably more hours to overhaul than the flight hours required to fly it to a maintenance depot. In such a case one must carefully weigh all pros and cons. Some commanding officers, however, without giving thought to the matter, hasten to send aircraft to maintenance depots for overhaul.

Speaking of the various factors which determine the success of economizing efforts in Air Forces units, we must also mention the professional qualities of commanding officers, political workers, and secretaries of party, trade union, and Komsomol organizations. It is for good reason that people characterize as a conscientious proprietor that leader of a military collective who has the ability to accomplish with maximum efficiency the tasks assigned to a unit and subunit. With this type of person, figuratively speaking, even a broken brick will be put to good use. Making frequent visits to aviation units, I have seen commanders, possessing sufficient practical experience and virtually the same possibilities, utilizing these possibilities differently.

As we know, independent airfield technical maintenance battalion commanders play a principal role in keeping a garrison spruced up and in improving service facilities. One such battalion was until recently under the command of Lt Col L. Boyarskiy -- a knowledgeable, energetic and demanding officer. Over a period of more than 2 years the battalion under his command saved thousands of rubles on renovation and operation of service facilities. Officer Boyarskiy began with selecting and assigning personnel to maintenance teams and organizing competition between them. He briefed personnel on the significance and objectives of the forthcoming work effort. The commanding officer, his deputy for political affairs, Maj Yu. Kankavichyus, and the party bureau secretary, Sr Lt B. Pokrovskiy, mobilized Communists and Komsomol members for shock-work labor. Summary reports on the achievements of each subunit would be posted daily, and the names of those specialists who had done the most outstanding job would be announced. Pledge fulfillment status would be regularly reviewed, and leading and lagging performers would be named. Each day the men knew who had accomplished his assigned tasks and how well. The achievements of competition right-flankers were reported in discussions, news bulletins, and leaflets. Such an organization of work activities made it possible to complete them on schedule and with good quality.

Equipment is maintained in an exemplary state in this battalion. The servicing and maintenance schedule and economy regimen are rigorously observed. Augmenting its contribution to implementation of the Food Program, the unit decided substantially to expand acreage planted to grain crops and to increase livestock productivity by raising more purebred pigs. A total of 500 square meters of greenhouses is being put into operation. The deputy commander for supply,

Capt S. Ivanenko, has calculated that the heat-generating capacity of the bath and laundry combine is fully adequate to ensure normal greenhouse operations.

Lt Col L. Boyarskiy has now received a job promotion.

The party and government, USSR minister of defense and the commander in chief of the Air Forces are presently assigning the task of substantially improving economizing effort in the unit and increasing efforts to implement the Food Program. Proceeding from this, the rear services should evidently consider the possibility of centralized provision of vehicle-mounted agricultural implements to the units. Seminars and training conferences should be held for those persons responsible for this important work area, for the purpose of teaching them the fundamentals of agronomy and other agricultural sciences. This will constitute effective assistance to commanders of independent airfield technical maintenance battalions and to those who are involved in a practical manner in running subsidiary food raising operations.

There are many interesting ideas, observations, and conclusions in the statements of all those who have taken part in discussing matters of thrift and economy on the pages of this journal. Apparently the people in the localities should carefully reread the pertinent materials and more thoroughly study their possibilities for development of economizing effort in the units in order to conduct more aggressively the important business of improving the forms and methods of campaigning for economy and thrift.

To develop in personnel the ability economically to utilize each and every minute and efficiently to utilize the assets allocated for maintaining aviation units in a continuous state of combat readiness signifies making a substantial contribution to the common cause -- strengthening the might of the Air Forces, which are guarding the airspace of our Soviet homeland.

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SQUADRON PROPAGANDIST COMBATS 'IMPERIALIST IDEOLOGICAL SABOTAGE'

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, Dec 83 (signed to press 1 Nov 83) pp 12-13

[Article, published under the heading "At the Fronts of the Ideological Struggle," by Maj V. Magerya: "Bearing the Word of Truth"]

[Text] In the officer Marxist-Leninist training group led by squadron deputy commander for political affairs Maj P. Barashev they were holding a seminar on the ideological contest between socialism and capitalism in present-day conditions. Lt S. Selikhov was one of the first to volunteer to respond. He replied, his eyes riveted on his notes, glibly spouting general phrases and political terminology. The officer did not cite a single example. The group leader, patiently hearing him out, inquired: "Specifically in what is expressed the aggressive essence of U.S. imperialism?"

"But I already said it," the lieutenant replied, perplexed.

"Who would like to add to Selikhov's response?" the propagandist addressed the audience.

Several volunteered. Capts S. Felimoshin and V. Maslennikov, Sr Lt A. Podsypanin and others, making reference to the proceedings and decisions of the June (1983) CPSU Central Committee Plenum, presented the seminar topic in detail, citing specific examples. Noting the complexity of the current international situation, they presented the substance of the principal bourgeois notions on matters of war and peace, emphasized their falsity and anti-Sovietism, and pointed out the true guilty parties for the "psychological warfare" unleashed by the Reagan Administration: imperialism and its shock detachment, Zionism. And, most important, they exposed the class essence of the anti-Soviet ideology of imperialism.

Everybody at the seminar had the opportunity to state his opinion and to debate. All questions took on total clarity following Major Barashev's presentation, and this unquestionably constituted the main result of the seminar.

Petr Vasil'yevich has been involved in party-political work for 7 years now. When the chief of the political section asked him, a senior lieutenant and detachment navigator at the time, to accept the position of squadron deputy commander for political affairs, Barashev thought to himself: "The position of

political leader of a large collective is quite prestigious, but it involves tough demands. Can I handle the job?" At that time he was already a veteran of several years of Komsomol work, followed by party work, which he done simultaneously with performing his regular duties. Weighing all the factors, the young officer replied with firmness: "I'll do it."

Each year was a new high point reached on the path of development of an officer-political worker. His propagandist skills were also growing year by year. As Petr Vasil'yevich acknowledged, however, it was not easy to master this most important party weapon. At first he encountered many difficulties. Major Barashev still remembers his first setback. He had been appointed leader of a Marxist-Leninist training group. He thought he had thoroughly prepared for that first lecture: he had spent considerable time at the library and had looked through a great deal of literature. And he was well acquainted with the subject. But he became confused under the gaze of dozens of alert eyes. He simply read off his lecture notes and, receiving no questions from the audience, left the podium in a downcast state.

"Don't despair," he was told by the then deputy commander for political affairs, Lt Col A. Lotorev. "Everybody can have setbacks. Skilled propagandists are made, not born. And this requires a great deal of work, to master methods skills, to improve the memory, and constantly to increase one's knowledge. Here is another piece of advice: remember that there is no such thing as a lightweight topic; there is only a lightweight approach to working up a topic. You will have the ability to present materials, and in time you will become a good propagandist. But this requires study."

He had to work a great deal in order to develop purposefulness in his work, to amass the requisite knowledge, and to acquire methods skills. Petr Vasil'yevich learned from experienced lecturers the ability to command the attention of his audience and to establish close contact with it. He was greatly assisted by unit propagandist Capt V. Yerokhin and other activists.

"The main thing is to speak to the men in a lively and easily-understood manner, to speak in such a manner that each man believes that you are talking precisely to him," he was counseled by then party committee secretary Maj N. Karasev.

In time officer Barashev gained experience and amassed profound knowledge. But even now he carefully prepares for each lecture, report, and seminar. He devotes particular attention in Marxist-Leninist training classes to exposing bourgeois, revisionist and Zionist ideology, to instilling in his students a class hatred toward imperialism, and developing in them the ability to counter subversive propaganda efforts. Petr Vasil'yevich is greatly assisted by thematic selections of newspaper and magazine materials, which he began assembling, following the advice of the deputy commander for political affairs, at the time of his first presentation. He now has selections on the topics "Imperialism Before the Judgment of History," "Capitalism -- Society Without a Future," "Bloody Crimes of Imperialism," "Anticommunism and Anti-Sovietism -- The Principal Thrust of Acts of Ideological Sabotage by Imperialism," "The United States -- Main Source of Aggression and Threat of War," plus others. Many people in the unit now know about them.

"It's good, very helpful in our work," says Lt Col A. Khmara, one of the Marxist-Leninist training group leaders.

Barashev shared his experience in assembling such selections at training conferences for volunteer propagandists. In preparing for a presentation, putting together a seminar summary outline, Petr Vasil'yevich tries not to leave out critique of bourgeois notions on various problems and unmasking of acts of ideological sabotage, bolstering his main ideas with quotations from the writings of the founders of Marxism-Leninism, points and conclusions contained in the proceedings of the 26th CPSU Congress, the June (1983) CPSU Central Committee Plenum, and the proceedings of the 6th Armed Forces Conference of Primary Party Organization Secretaries.

Do difficulties and complications occur? Yes, they do. At one seminar they were discussing Soviet peace initiatives. The audience generally had a correct awareness of the complexity of the present international situation, caused by actions by the imperialists, and particularly the U.S. imperialists. Some of the statements were unspecific, however, and seemed little-convincing to the instructor. There was food for thought here. Petr Vasil'yevich then, on agreement with the higher-echelon political agency, distributed a questionnaire on the subject "How do you assess the international situation from the standpoint of danger of outbreak of another world war?"

Based on the results of the questionnaire survey, it was necessary to do certain work to ensure that each member of the collective became deeply aware of the criminal adventurism on the part of government and militarist circles in the United States and its NATO allies, the savage hatred of the imperialists toward socialism, and that they understand that only increased combat readiness on the part of the Armed Forces and personal responsibility for combat readiness on the part of each and every serviceman constitutes a guarantee of our nation's security, as was stressed at the 26th CPSU Congress, the November (1982) and June (1983) CPSU Central Committee plenums, in the Declaration by CPSU Central Committee General Secretary Yu. V. Andropov, chairman of the Presidium of the USSR Supreme Soviet, and in other party and government documents.

There were also instances in Major Barashev's work which required immediate intervention. Once he was witness to a scene where one of the officers, in the presence of fellow personnel, was stating incorrect opinions on certain issues. It was necessary not only to break into the conversation but also vigorously to draw the attention of the Komsomol organization to the inadmissibility of such a thing and to take action not only against those who permit themselves to make such statements but also those who fail to respond in the proper manner.

"The main thing," said Petr Vasil'yevich, "was that I succeeded in making all the members of the group and all squadron aviation personnel realize that imperialism is a sophisticated adversary, possessing a powerful material and technical foundation for waging psychological warfare and utilizing every opportunity to insert at least the shadow of a doubt into the minds of Soviet citizens, especially military personnel. This is an implacable class enemy. And the main condition for countering the vicious slander and various acts of

ideological sabotage by this enemy is solid ideological conviction, faithfulness to the cause of the party, moral purity, an uncompromising attitude toward deficiencies, and a high degree of political vigilance."

I witnessed repeatedly how enthusiastically the people in Major Barashev's group attend class sessions. The secret of such interest in the seminars is simple. The fact is that they are conducted in a lively and interesting manner, the instructor employs visual aids, shows filmstrips, slides, excerpts from motion pictures, and organizes book exhibits. Nevertheless Major Barashev is firmly convinced that scheduled classes are merely the groundwork in mastering knowledge within the Marxist-Leninist training system, and that independent study by those attending the seminars constitutes the main form of activity. They are assisted in this by supplementary measures: oral journals, question-and-answer evenings, Lenin readings, and movie evenings.

A movie evening on the topic "Zionism -- Shock-Force Detachment of Imperialism, Source of Brigandage and Aggression," for example, went as follows. A presentation by the group leader, which exposed the sources and the reactionary essence of the ideology, political practices and system of organizations of the most affluent European bourgeoisie, its close solidarity and collaboration with U.S. imperialism was followed by a showing of the film "Caution, Zionism!" It made a strong impression on the audience; the film showing was followed by a long exchange of opinions. Statements made by Capts V. Bazanov, Yu. Mikhaylov, V. Bukovskiy, and other aviation personnel were well reasoned, specific, and substantial. Capt V. Maslennikov told of the lamentable fate of those who had fallen for Zionist propaganda and had departed for the "promised land." This was a useful and memorable discussion.

Party member Barashev attaches great importance to increasing the effectiveness of political training, strengthening its influence on combat training results and improvement of the training and indoctrination process. Speaking at party and Komsomol meetings and bureau sessions, this officer, stressing Lenin's thesis that any slackening of military discipline leads to a weakening of the military and plays into the hands of the class enemy, always firmly and frankly exposes deficiencies and names specific guilty parties. Violators of military discipline feel especially uncomfortable. He also goes after those who have a frivolous attitude toward deepening their political knowledge. And as a rule his impassioned party word reaches its aim. Following meaningful criticism, for example, Sr Lts V. Kaganovskiy and A. Lozhkin changed their attitude toward military service and Marxist-Leninist training.

In his speech at the June (1983) CPSU Central Committee Plenum, CPSU Central Committee General Secretary Comrade Yu. V. Andropov stressed: "...It is important to have the ability to communicate in an easily understandable and persuasive form the truth about the socialist society, its advantages, and its peace policy... skillfully to expose lying, subversive imperialist propaganda." As a Marxist-Leninist training group leader and member of the agitation and propaganda unit attached to the political section, party member Barashev frequently presents lectures, talks, and reports on the successes of our homeland, on the indissoluble unity of army and people, ranked solidly behind the Communist Party, and on the dedication of all our people to the ideals of Marxism-Leninism. He bears to our servicemen the word of the party, the word of truth, which ideological saboteurs are unable to distort.

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IMPORTANCE OF IDEOLOGICAL INDOCTRINATION STRESSED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, Dec 83 (signed to press 1 Nov 83) p 14

[Article, published under the heading "The Squadron -- Center of Ideological Indoctrination Work," by aviation regiment propagandist Gds Maj A. Stayetskiy: "Face to Face With Life in the Unit"]

[Text] "Continuous ideological influence on all categories of personnel is a powerful accelerator of successful implementation of all Armed Forces training plans."

From a report by USSR Minister of Defense MSU D. F. Ustinov, member of the CPSU Central Committee Politburo, at a meeting of USSR Ministry of Defense party activists held on 21 June 1983

Studying the proceedings of the June (1983) CPSU Central Committee Plenum, I recalled a conversation I had once had with a certain officer, a young volunteer propagandist. He had been given an assignment to present a lecture to the aviation specialists in his squadron on the aggressive aims of imperialism and the need to maintain a high level of combat readiness and political vigilance. At the appointed time the officer reported that he was ready to give his lecture, and then he suddenly exclaimed: "Forget about the squadron! We couldn't even round up an audience right now. Let's invite all the enlisted personnel and NCOs in the regiment. I have spent so much time preparing! It would be a pity to waste the labor...."

"A propagandist's labor is appraised not so much by the size of his audience as by the effectiveness of his presentation," Gds Lt Col V. Mikhaylov chimed in.

This veteran political worker demonstrated to the volunteer propagandist in a lively and persuasive manner why it is best to conduct mass-political and other activities precisely in the subunits.

"You say there will be few persons attending your talk?" Viktor Pavlovich continued. "That may be so, but you are acquainted with each and every one of them,

with good knowledge of each man's strong and weak points. I think you should go to the squadron, talk to the aviation personnel, inquire about their moods and attitudes. At the same time you will learn about their daily life and interests. Subsequently, in the course of your talk, it will be easier to establish contact with your audience."

The officer heeded this advice. A few days later he held a talk in the squadron. The aviators were pleased. He succeeded in closely linking the subject of his talk with the tasks being performed by the subunit. Guards Lieutenant Colonel Mikhaylov advised the young propagandist to consolidate his success....

I have mentioned this incident for a reason. Precisely this approach to ideological indoctrination work was discussed at the June (1983) CPSU Central Committee Plenum and at the 6th Armed Forces Conference of Primary Party Organization Secretaries. Only in this instance, it was emphasized at the conference, can one talk about transforming each party organization into a genuine nucleus of the military unit, a center of ideological indoctrination activity.

Our unit's command and party committee seek to ensure that the members of the agitation-propagandist group, just as all regimental headquarters Communists, visit the barracks and airfield with greater frequency during the period of preliminary preparations for flight operations, present lectures and talks to squadron and technical maintenance unit personnel, thoroughly examine problems of concern to people, and help in correcting deficiencies. Gds Lt Col V. Mikhaylov, Gds Lt Col I. Pivovarov, who attended the 6th Armed Forces Conference of Primary Party Organization Secretaries, Gds Lt Col V. Vladimirov, and other party activists display a fine example of this kind of attitude toward their job.

Recently, for example, unit headquarters party organization secretary Pivovarov, preparing to address the young pilots and navigators of one of the squadrons, got together with the subunit commander, his deputy for political affairs, and the party bureau secretary, questioned them about the work and training performance of their lieutenants, and learned what problems face them and what tasks they are to accomplish in the new training year. Thus the propagandist came to the talk well prepared, informed in detail on the work activities of these young men. As a result, the lieutenants listened to him attentively, with interest, and remained for quite some time, discussing how to improve the quality of preparations for flight operations, and each individual's contribution toward increasing combat readiness and strengthening military discipline. The talk clearly stirred the emotions of these pilot-navigators and encouraged them to correct deficiencies. There have been many similar instances in propagandist Pivovarov's ideological work.

Squadron presentations by another member of the agitation and propaganda group, Gds Maj V. Kochetkov, are also always of a businesslike, frank and firm nature, and therefore as a result they produce results.

One evening, following flight operations in one of the squadrons, he proceeded to discuss with junior aviation specialists ways to improve the quality of aircraft equipment servicing and maintenance. In the course of the conversation he

learned that they were experiencing certain inconveniences with living conditions. This naturally affects people's mood. Party member Kochetkov immediately, without postponing it, reported these problems to the commanding officer and made sure that immediate steps were taken to improve availability of personal services for the aviation specialists.

This is one of many examples which confirm party member V. Kochetkov's strong feeling of responsibility for the state of affairs in the subunit. He is always primarily concerned with matters pertaining to improving the quality of personnel combat training. But he also devotes considerable attention to organization of aviation personnel off-duty and leisure time, bearing in mind the statement made by the USSR minister of defense and commander in chief of the Air Forces that all this directly affects people's mood, their attitude toward their job and, in the final analysis, subunit combat readiness.

Other leader-Communists and party activists also take active part in ideological indoctrination and agitation-propaganda work. Their arsenal contains many well-proven methods and forms of ideological indoctrination work with people, especially work with individuals. One can state with confidence that there are no areas in the daily life and activities of the subunits which are not at the center of their attention: be it classes in Marxist-Leninist and political training or aviation personnel participation in mastering complex aircraft equipment, the campaign for flight safety or strengthening of military discipline.

I hold that all Air Forces propagandists, who are implementing the demands of the June (1983) CPSU Central Committee Plenum and the CPSU Central Committee decree entitled "On Further Improvement of Ideological and Political Indoctrination Work," must constantly bear in mind that the Leninist principle of link with the masses signifies first and foremost the science of man, that is, thorough knowledge of people's needs, requirements, and moods. V. I. Lenin always paid attention both to people's mood and their physical condition. He considered it very important to talk to people in a sincere, heartfelt manner, to get people to like him, to evoke total frankness, to give useful advice, to warn people against mistakes in a comradely manner, and to support positive initiative.

Our party activists and agitation-propaganda group members are endeavoring to structure their activities precisely in this manner in the new training year, activities aimed at turning each and every aviation subunit into a center of ideological indoctrination work.

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FIGHTER PILOT-INSTRUCTOR HONES COMBAT PERFORMANCE SKILLS

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[Article, published under the heading "Military Educational Institution Affairs," by Lt Col A. Finayev: "Instructor's Handwriting"]

[Text] There was not a cloud in the sky above the airfield. Visibility unlimited, as they say. The instructors were flying today, honing their professional skills, while the pilot cadets were seated in classrooms, increasing their knowledge of theory. The instructors were performing skillfully and with precision, at the highest level of excellence, nor could it be otherwise. Every instructor is clearly aware of the fact that one can train a superior combat pilot only if the instructor himself has a consummate mastery of the complex equipment.

The socialist competition leaders include Sr Lt Yevgeniy Akimov. He is a tall, physically well developed officer. He holds a first-category rating in sport flying and military multiple competition, is a pretty fair boxer and soccer player, and a veteran of many competitions.

Akimov had enrolled at the Armavir Higher Military Aviation School for Pilots immediately upon graduating from secondary school. He had made this choice as a child. His father, a truck driver by profession, holder of the Medal For Valiant Labor, had worked in the virgin lands, had traveled all over, and he and his family had lived in various places, frequently near airfields. Noting the delight with which his son gazed at aircraft flying overhead, he understood, approved of and supported Yevgeniy's aspiration to fly. His uncle, a military pilot, had helped in making the final decision.

He made his first flight with pilot-instructor Pavel Sidorov. And what joy he experienced when he soloed! Akimov realized from the very start of his military service that he would not get very far without thorough, solid knowledge. Therefore he studied hard and conscientiously. He did not experience any particular difficulties in his studies. He received excellent grades on his graduation-year final examinations. He was commended by the chairman of the state examination board.

Upon completing school, Yevgeniy very much wanted to be assigned to a line unit. He believed that he would enjoy greater independence in a line assignment. They fire their guns and missiles and intercept targets with greater frequency, he reasoned to himself. But immediately after the examinations the school commanding officer suggested to him: "We are thinking of keeping you here as an instructor. We are badly in need of good pilots. What do you say?"

Yevgeniy thought the matter over and assented. Soon he successfully passed the examinations for his pilot 2nd class rating. He was accepted to party membership. Now Senior Lieutenant Akimov sets the tone in training. He is commander of an excellent-rated crew. His comrades elected him party organization secretary.

...The fighter was ready for takeoff. Akimov was at the controls. His calm voice came over the speaker, and a moment later his combat aircraft was airborne. The instructor was scrambling for a mock intercept. Maj V. Savenkov, commander of an excellent-rated flight, was acting as the target. He is an excellent pilot, and naturally he would endeavor to evade the attack.

And that is what happened. As soon as Akimov reported target contact back to the command post, the "aggressor" proceeded to maneuver. But Akimov had thoroughly prepared for this mission for good reason. He realized that it was no easy matter to intercept an "intruder" if the aircraft is being flown by an experienced combat pilot. In addition, the fighters were the same type of aircraft. Success depended on the tactical skill of the pilots, their ability to predict the course of events and to choose the only correct decision in a rapidly changing situation.

Yevgeniy went through several intercept variations on the ground. Now, when the flight commander proceeded to maneuver evasively, he employed one of them. Utilizing the information received from the tactical control officer, Akimov determined the moment when the target "ducked" under the interceptor's radar scan coverage. He did not proceed to follow but, "cutting" his turn, closed to sure lock-on range. The bandit, completing his descent, again proceeded to climb. He appeared as a bright blip close to the zero azimuth line on the aircraft's radar gunsight. He centered the target.

"Lock-on!" he reported to the command post, and a few seconds later: "Launch!"

The recording equipment recorded a direct "hit." The interceptor quickly broke off the attack.

During this flight operations shift the pilot-instructors received high marks on all training sorties. Senior Lieutenant Akimov did his part in contributing to the overall success. He flew several more sorties, and marks of excellent were placed after his name on the socialist competition progress board. The fighter, preflighted by the caring hands of aircraft maintenance technician officer A. Khmel', did not let him down; all systems and subsystems performed flawlessly. The commander thanked Lt Tech Serv Khmel' for doing a fine job of readying the aircraft for action.

Soon pilot cadets will again appear at the training airfield. Their instructors are preparing for this event. In order competently to teach future combat pilots the science of winning and to form ideological conviction in them, not one unclear question should remain unanswered in the period of preparation for pilot cadet flying. Successful high-quality, comprehensive training of young aviators depends in large measure on the skill of their instructors. Therefore the intensity of combat training does not diminish for a single minute; the process of improving the proficiency of the pilot-instructors continues.

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JOB OF SQUADRON POLITICAL OFFICER DESCRIBED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, Dec 83 (signed to press 1 Nov 83) pp 16-17

[Article, published under the heading "Into Competition," by Maj A. Yudin:
"Begin With Yourself"]

[Text] When the regimental commander offered to military pilot 2nd class Maj P. Gilevich, who had just returned from leave, the position of 1st Squadron deputy commander for political affairs, the latter was initially surprised: "But why? I hold that position in the 2nd Squadron...."

His thoughts went to his collective, in which he had struck down deep roots, as they say. Gilevich had come to the 2nd Squadron right out of service school. In this squadron he had learned to be a good pilot, had become a flight commander, and had been elected subunit party bureau secretary. He liked working with people. When they offered him the job of deputy commander for political affairs, he agreed without hesitation. The squadron began winning first place in socialist competition with increasing frequency. Gilevich was given an early promotion to the rank of major for successful performance in combat and political training. His most recent efficiency report stated that he merited a job promotion. And now they were asking him to bid his squadron farewell....

The senior political worker, who was present during this conversation, supported the regimental commander.

"You see, Petr Yulianovich," he turned to Gilevich, "recently the 1st Squadron, according to which overall results are evaluated, has backslid appreciably. Marks in socialist competition have dropped, and discipline has worsened. I believe that you, together with the new commander of the 1st Squadron, will be able to correct the situation. We hope that you will justify the confidence of the regimental command...."

Gilevich arrived home earlier than usual that day. His family was surprised and pleased at his arrival, especially his little daughter and son. But Petr Yulianovich was unable to play with them as was his wont. He could not get the recent conversation out of his mind.

He frequently caught himself thinking about the 1st Squadron. He also knew this collective pretty well. The subunit had frequently taken part in tactical air exercises away from the base, and therefore many problems had arisen.

Gilevich himself had on occasion flown to the range for the 1st Squadron pilots. He therefore knew that deficiencies for the most part were due to incorrect planning, and sometimes due to lack of organization and discipline as well on the part of squadron personnel.

The commander of the 1st Squadron, military pilot 1st class Maj A. Simonenko, heartily approved of the regimental command's choice. He had once flown with Gilevich in the 2nd Squadron and was familiar with his professional and personal qualities as well as his organizing abilities.

"The people in the collective are pretty fair," the squadron commander told Petr Yulianovich, "but they have not yet developed good teamwork. The previous deputy commander for political affairs had problems with flight training, and he performed his duties without particular enthusiasm. He did not display a good personal example. As for the party organization secretary, Captain Mileshko is an excellent pilot, but at times he is somewhat short on indoctrination work experience. I believe that you should begin working first of all with the party activists, for they are an example for everybody."

The commanding officer's advice was quite appropriate. Petr Yulianovich himself came to the conclusion that things could not be improved without increasing the feeling of responsibility on the part of each and every leader-Communist and his personal exemplariness in flight activities, combat training and performance of job duties. "I must begin with myself," he firmly decided, upon acquainting himself with squadron affairs.

Gilevich spoke with activists, gave specific assignments, and verified assignment execution. He endeavored to look into the mutual relations which had become established in the flights and maintenance groups and to determine the factors hindering personnel from working smoothly and efficiently utilizing their capabilities. In addition to all else, it was necessary for him, just as for the other pilots, continuously to improve his professional skills. Therefore the first task which the new deputy commander for political affairs set for himself was to become a military pilot 1st class.

Anybody who is familiar with Petr Yulianovich's character will have no doubt that, once having set a goal for himself, he will not retreat from any difficulties. Such was the case on this occasion as well. Thanks to his unusual efficiency, energy, and ability to work with others, Gilevich soon earned universal respect. Aviation personnel sensed in him the firm grasp of a genuine political worker, capable of leading others, and the Communists acknowledged him as their party mentor. In due course Gilevich successfully passed all tests and accomplished the requisite check flights for earning a higher proficiency rating. Soon thereafter, at an official ceremony, the commanding officer handed Major Gilevich the military pilot 1st class badge. This was a confirmation of his rule to live by: begin every job with yourself. At the same time he also accomplished his other plans.

Once at a party bureau meeting Gilevich proposed examining the matter of work with technicians and mechanics, for they determine aircraft combat readiness and in the final analysis pilot combat readiness to a considerable degree.

Prior to this the political worker had carefully examined the aviators' daily life. On the flight line and in the classroom he found agenda topics for future party bureau sessions, party meetings, lectures and talks.

He reported his observations and conclusions to the squadron commander. Major Simonenko agreed with Petr Yulianovich's opinion, offered some useful advice, recommended what should be given priority attention, and promised his support.

At the next party bureau meeting, the agenda of which covered aviation engineer service specialists and their role in increasing squadron combat readiness, Major Gilevich presented a concise report filled with specific facts on the work of the aviation engineer service specialists. For example, the political worker discussed two maintenance groups in detail, analyzed the microclimate which had been established in each, and pointed out positive aspects and deficiencies in the performance of individual party members.

The squadron deputy commander for political affairs immediately established close and cordial contact with Capt Tech Serv G. Il'gevichus, and this was understandable. This officer has headed the electronics maintenance group for 8 years now. He is an experienced organizer and a knowledgeable methods specialist and indoctrinator. For quite some time now there have been no avionics failures on the ground or in the air through the fault of the specialists in this group. Nor have there been violations of military discipline. The group has maintained a rating of excellent for several years in a row.

"Credit for achieving this success goes not only to the commanding officer," Gilevich stated with conviction at the party bureau meeting, "but all party members as well. They are few in number, but they are carrying out their vanguard role in a practical manner, ignoring not a single member of the group."

He cited an example of indoctrination work. Quite recently a young officer, Lt Tech Serv V. Mukosey, reported for duty right out of service school. The fact is that he had been given a rather poor efficiency report. But this did not trouble the Communists. They greeted the lieutenant in the proper manner, surrounded him with attention and concern, and enlisted him in volunteer work. And Mukosey grasped the fact that the group contained people to emulate. He quickly became a part of the team and soon took over for Il'gevichus, who had left on leave.

A different situation developed in the aircraft equipment group, headed by Sr Lt Tech Serv V. Fedosov. Some of the specialists were inadequately trained for their job and were committing discipline violations. The group lacked mutual understanding. Fedosov himself did not inquire very deeply into the concerns and needs of his men. And he had long since become accustomed to hearing unflattering comments about himself at every meeting and conference.

Petr Yulianovich, while endeavoring not to be importunate, became more closely acquainted with the people in the group. He inquired about their job proficiency, ideological-political knowledgeability, spiritual and intellectual aspirations, and needs pertaining to daily living. He tactfully elicited their

opinion on their group chief and his work style. And he discovered a great deal. It seems that Fedosov was an excellent maintenance specialist, with a master proficiency rating, but a bit weak in the teaching and indoctrination department. Glancing through the officer's service record, Gilevich immediately could see that Fedosov had no experience in indoctrinating personnel. And nobody had taught him. This was the reason for many mistakes.

At first the group chief made every effort to avoid entering into a frank conversation with the new deputy commander for political affairs. He thought up various pretexts to avoid such a discussion. But Petr Yulianovich was persistent. "He is apprehensive about getting another lecture," he realized, and again sought to achieve mutual understanding with the officer. He sought precisely mutual understanding, but did not utilize the authority he possessed. As a person in authority, he could summon Fedosov to his office, but under the circumstances he considered this unnecessary.

A frank talk did in fact take place. And, surprising to both of them, it lasted quite some time. The fact is that when Fedosov realized that the political worker was treating him with kindness and a comradely attitude, he immediately responded in kind. He proved to be an interesting interlocutor. Petr Yulianovich was pleased to take note of his erudition, technical knowledgeability, and the fact that he was well read. The conversation gradually turned to people, their character and personality, views, and habits....

This was followed by many such get-togethers. Many of these were initiated by Fedosov. Most importantly, each such encounter left its mark. Gilevich was getting to know Fedosov better and better, while Fedosov was discovering new things in the area of ideological indoctrination work. He put into practice all the valuable points he learned from the political worker. Gradually the maintenance group shaped up. With time they improved servicing and maintenance of aircraft equipment.

The party bureau in question made a useful contribution. It reached a specific, practical decision aimed at enhancing the vanguard role of party members in organizing aviation personnel combat training and improving their ideological-political and moral indoctrination.

Trading impressions following the meeting, the squadron commander and the deputy commander for political affairs reached the common conclusion that it was also essential to devote more attention to other maintenance group chiefs and flight commanders who, like Fedosov, had only recently been appointed to their position. They were given little instruction in working with people, and more frequently merely made to answer for shortcomings. Naturally in such a situation many people will be unable to choose a correct line of conduct and properly arrange training and indoctrination of subordinates.

Conclusions were drawn, and the first instruction methods classes with activists appeared in the next monthly political indoctrination activities plan.

In particular, at one of these classes Petr Yulianovich shared with the activists his thoughts on the reasons for deficiencies in readying the

missile-armed combat aircraft for flight operations and discussed the most effective methods of training and indoctrinating aviation engineer service specialists. He then asked Capt Tech Serv G. Il'gevichus to discuss his indoctrination work methods. The political worker recommended that the party bureau synthesize the experience and know-how of this officer-leader and disseminate it in other collectives. Soon after the meeting, Major Gilevich was approached by Fedosov with a request for advice on what literature to read in the field of military education science and psychology.

Meaningful relations gradually began to be established among the squadron's aviation engineer service specialists, and the quality of servicing and maintenance of combat aircraft improved. Gradually the activities of the technical circle perked up, and aviation specialist training got into gear. The commanding officer and his deputy commander for political affairs did not allow themselves to become seduced by the initial successes. They endeavored not to ignore methods training for leader-Communists and gave them every possible assistance.

Gilevich once commented, as he was returning home from work with Major Simonenko: "Are we doing the right thing, comrade commander, in frequently reprimanding the pilots for mistakes in flying technique and combat employment? Perhaps we should alter our method of training sortie debrief and critique. If a person is first encouraged and given confidence that he is doing pretty well, he will become inspired. After this one can tactfully point to his mistakes and tell him how to correct them. I am sure that this would be more beneficial...."

"I have already given this some thought," the squadron commander replied after a brief silence. "I am pleased that our views are in agreement. Tomorrow we shall get together with the flight commanders and discuss flight debriefing and critiquing methods."

At first glance it seemed that the political worker's suggestion contained nothing new. At the same time he had noted that the people in the squadron had become accustomed to reprimands. And yet the aviators also deserved certain praise. The lack of objectivity in appraising their actions engendered pessimism and a lack of confidence in one's ability.

The suggestion to improve flight debriefing and critiquing methods was a timely one not only from the standpoint of raising spirit and morale in the squadron but also, and this is especially important, for correcting the lag which was noted in preparing pilots for earning a higher proficiency rating. The squadron commander and his deputy commander for political affairs realized that in order to accomplish the annual target for hours logged it was necessary, in addition to all else, substantially to improve the quality of planning and scheduling each day of flight operations. In view of the changeable local weather, it was better to devise schedule variations. The work volume will increase both for flight and ground personnel.

The correctness of this decision was subsequently confirmed. The squadron continued confidently moving forward, regaining lost performance levels.

Personnel displayed a high degree of professional expertise at the tactical air exercise held soon thereafter. The aviators once again won first place in socialist competition and earned the squadron a rating of excellent.

The squadron is now performing new combat training tasks. Pilots, technicians, and junior aviation specialists are working at full effort. The successes of every flight operations shift persuasively attest to the fact that aviation personnel are meeting their tough socialist pledges with honor and are filled with resolve to retain the title of excellent-rated subunit.

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RECENT UNIT PARTY ORGANIZATION ACTIVITIES OUTLINED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, Dec 83 (signed to press 1 Nov 83) pp 18-19

[Article, published under the heading "Reports and Elections in Party Organizations," by Col V. Obukhov: "Firmly and Exactly"]

[Text] Reports and elections are coming to an end in Air Forces party organizations. Party members are reviewing work accomplished toward the main objective -- further increasing the vigilance and combat readiness of military units. In assessing what has been accomplished, they are guided by the CPSU Central Committee decree on the holding of reports and elections, which states in particular: "Elected party officials shall present thorough, self-critical reports at meetings and conferences, containing constructive suggestions on improving all work efforts. The meetings and conferences shall display an example of collective analysis of practical activities and problems which arise, firm mutual demandingness on the part of Communists, and exacting accountability for deficiencies and errors of omission." When speaking in debates, party members -- aviation commanders and political workers, pilots, engineers, technicians, and specialists in the various services -- conduct a substantive discussion on what has been accomplished and how it has been accomplished, what has not been accomplished and why, and what reserve potential and prospects for the future are available.

The party organization of the unit in which Maj V. Yerokhin served as party committee secretary is rather large. The party members hold various job assignments within the unit, but they are all united by a feeling of belonging to the party of Lenin, right-mindedness, mutual demandingness, and a strong feeling of responsibility for the assigned task and for the overall successes of the unit.

Party members listened attentively to the accountability report, through the entire content of which there clearly ran the idea that there was a need for further strengthening discipline and organization of personnel and increasing the vigilance and combat readiness of this excellent-rated unit. A good deal had been accomplished during the period under review. As in the past, communications personnel completed the training year with excellent results and achieved complete personnel interchangeability and good job teamwork. The facts cited in the accountability report attest persuasively to this.

At one time the young communications personnel of the battalion under the command of officer Ye. Tolpik began falling behind in specialized training. Of course it would be difficult for the commanding officer to rectify the situation in short order. The party committee decided to devote a meeting to this problem and to give specific assistance to officer Tolpik in organizing and conducting additional training classes and consultation sessions. The deputy commander for political affairs, Lt Col V. Ul'yanov, and the members of the party committee, working in the battalion, delved deeply into the reasons for the deficiencies and uncovered errors in training and indoctrinating personnel. Party committee members Majs N. Kaydalov, S. Kondrat'yev, and others spoke with the officers, warrant officers, NCOs and enlisted personnel on how the combat and political training program was being assimilated and ascertained whether all Communists were displaying businesslike efficiency and a strong sense of responsibility for the quality of organization and conduct of training classes and drills. It became obvious that certain officers, including party members, had slackened their efforts in training and were guilty of unnecessary relaxation of demands and unnecessary situation simplification in training the men.

The members of the party committee informed the unit commanding officer on the deficiencies they had discovered, and subsequently discussed at a party committee meeting the tasks of Communists pertaining to improving the methods skills of training instructors. The unit commanding officer, the commanders of the battalions and companies were invited to attend the meeting. Following a report by the party committee secretary, those present exchanged views and opinions. It was pointed out to officer Tolpik and several other leader-Communists that they were not working at full effort and that they should show greater responsibility for prompt and high-quality accomplishment of personnel specialized training plan targets.

On the basis of the presented suggestions, the party committee helped the party bureaus of the battalions prepare for and hold party meetings, at which the question of exemplary performance by party members in specialized training was subsequently discussed. At the recommendation of the party committee, communications experts Lt Col P. Shkel', WO V. Yesipov, and other high proficiency-rating specialists addressed the men. They shared their experience and know-how and gave advice on how more efficiently to accomplish the tasks of further increasing specialized knowledge and the combat readiness of crews and duty shifts.

The measures taken by the commanding officer, his deputy commander for political affairs and the party committee made it possible comparatively rapidly to catch up in training and appreciably to boost the proficiency level of the sub-units. During this time the party committee secretary and members regularly visited the battalion and companies and maintained close contact with party members and Komsomol activists. They were thoroughly familiar with the state of affairs locally and concentrated attention on the most important issues pertaining to personnel training, on-duty and off-duty activities. Later the party committee thoroughly studied and subsequently discussed at one of its meetings party organization measures to improve combat training methods and level, to strengthen military discipline and to ensure exemplariness by party

members in field training activities, especially at night tactical drills and exercises.

Concerning itself with strengthening combat readiness, the party committee continuously increases demandingness on party members, has an implacable attitude toward even the slightest signs of negligence and irresponsibility, and is vigorously combating deficiencies. Last year one company received a low mark in combat training. The unit commanding officer took appropriate measures at the time, while the party committee demanded of the company commander and political worker a more responsible attitude toward organizing training and indoctrination of subordinates and gave practical assistance in correcting deficiencies.

The members of the party committee helped the commanding officer, political worker, and activists of the subunit to work in a more substantive manner on developing excellent-rated individuals, disseminating their experience and know-how, and pulling lagging performers up to the level of the leaders. The party committee did not usurp the functions of the persons responsible for the state of affairs in their assigned areas, but patiently taught them effectively and efficiently to conduct indoctrination work with individuals. This produced positive results. Things began noticeably improving in the company. For example, the signal troops personnel did a good job at the next specialized tactical exercise, involving adverse weather and a difficult tactical environment. In the past training year the unit achieved considerable success in training, in strengthening discipline, and received a high mark in the final performance evaluation. As was noted in the accountability report, this was achieved primarily due to the fact that the majority of subunit commanders and political workers learned to work in a differentiated manner with the various categories of personnel, to study their men more carefully, and to find a correct approach to each individual. Matters pertaining to increasing the personal responsibility of officers for quality of training and indoctrination of personnel, development of party-minded qualities in subunit commanders, and strengthening their prestige and authority constantly occupied the attention focus of command authorities and the party organization.

There were many difficulties on the road to excellent unit teamwork, mobility, and combat readiness. Sometimes it was necessary to return time and again to the same problem. The party organization, which had an implacable attitude toward deficiencies in combat and political training and in work between officers and subordinates, gave inestimable aid to command authorities. The party committee and party buros of the subunits impose tough demands on party members, regardless of their job assignment. Command authorities listen carefully to critical comments by party members and probationary members, to their advice and suggestions.

It once happened that violations of discipline began to be noted in one of the battalions during the summer period of training, and technical training performance declined. What was the reason for this? Training classes were regularly held in the battalion, just as in other subunits, and many interesting party-political measures were conducted. The commanding officer, his deputy commander for political affairs, party organization secretary officer

A. Gordeyev, and other Communists regularly presented reports and held talks on the significance of military discipline. This subject was repeatedly discussed at party and Komsomol meetings, at officer conferences and at meetings of personnel. Nevertheless the fallbehind was fact.

What was keeping the battalion from achieving the requisite results? The commanding officer, his deputy commander for political affairs, and party committee members Communists P. Klebanyuk and V. Yerokhin reached the conclusion that the principal reason for the problems was neglect of work with individuals. A decision was made to discuss this matter at a meeting of the party committee, first making a thorough study of indoctrinal practices of the company commanders, visiting training classes and talking with the men.

The battalion party organization secretary presented a report on individual work by party member-officers at a meeting of the party committee. Discussion of this report was beneficial not only to battalion leader personnel but also to the unit commanding officer, his deputies and members of the party committee. The frank, party-minded discussion helped the battalion commander, his deputy commander for political affairs and the party buro secretary to analyze their work deficiencies. They took the criticism in a positive spirit and made a number of suggestions aimed at strengthening party influence on every serviceman.

Correct comments were also made at that expanded meeting of the party committee regarding staff officers, who were criticized for errors of omission and dissemination of the advanced know-how of master-rated signal personnel, for poor communication with young officers, and for the fact that they have little contact with personnel during off-duty time.

One could sense in the remarks by party members a sincere endeavor to help the command authorities overcome deficiencies in short order and to suggest ways to strengthen discipline and improve the quality of technical training classes in the lagging subunit. The party committee meeting helped many Communists revise their work style and carefully analyze their job activities from the standpoint of the demands of the June (1983) CPSU Central Committee Plenum.

Take, for example, work with young officers, synthesis and dissemination of the experience and know-how of the top subunit commanders. It would seem that a good deal was being done in this area. Nevertheless senior level officers were still at quite some distance from the junior officers, and sometimes proceeded to work with a junior officer only when serious deficiencies were discovered in his job performance or personal conduct.

The party committee suggested to battalion Communists the main direction to take in their work and advised them where to concentrate their primary efforts. A significant role here was played by a battalion party meeting on strengthening military discipline, talks with platoon personnel, and reports for officers on the individual approach method in indoctrinating personnel and on combining demandingness with concern about one's subordinates. All this was reinforced with specific organizational work by battalion Communists, the unit command and party committee. An effort was made to teach subunit commanders a skilled individual approach to their men and effective utilization of the steadily growing political activeness of personnel in the campaign to achieve excellent results in training, discipline, and in further increasing combat readiness.

The activities of the party organization have improved appreciably since the June (1983) CPSU Central Committee Plenum. Having studied the plenum proceedings, party members gained a deeper understanding that only a constant increase in political and military knowledge will help them more actively influence the men and more successfully mobilize them to accomplish training tasks and strengthen combat readiness. There has been a substantial increase in the organizing role of the party committee and subunit party buros. Party member political training tasks have begun to be discussed more frequently at party meetings, party committee and bureau sessions.

The party committee has done a good deal of work with party members and probationary members and has helped many correctly organize independent study of primary sources within the Marxist-Leninist training system. It was ascertained that many party members are inclined to study more deeply matters connected with military indoctrination. The party committee gave its support to this desire by the officers and assigned experienced consultants from the agitation and propaganda group members.

When the new training year began, the members of the party committee and party bureaus of the subunits assumed continuous oversight over the political instruction of party members. They periodically talk with members of Marxist-Leninist training groups and inquire about how they are preparing for seminar classes, what they are reading, how they meet difficulties, and how they proceed in discussing points of theory. Continuous scrutiny enables party activists to be current at all times on how party members are increasing their ideological-theoretical knowledge, improving their professional skills, and to take timely steps to correct deficiencies.

The party committee also scrutinizes matters pertaining to raising the ideological-theoretical level of the large group of propagandists, particularly political instructors. At the initiative of the party committee, lectures entitled "CPSU Concern for Strengthening the Soviet Armed Forces," "Principal Traits of a Leninist Work Style," "Hating the Enemies of Peace and Socialism, Exposing Their Aggressive Intrigues," plus others have recently been held for political instructors. In order to boost ideological work, the party committee is taking effective measures to improve propagandist activities by activists, and particularly the agitation and propaganda group. Its plan targets have been revised in light of the decisions of the June (1983) CPSU Central Committee Plenum. Agitation and propaganda group members have presented a number of lectures on the leadership role of the CPSU in building communism, on Soviet patriotism as one of the motive forces of our society's development, and on aggressive military blocs directed against the socialist community. Considerable attention is being focused on indoctrinating servicemen in a spirit of hatred toward international imperialism and unmasking of U.S. intrigues in various parts of the world. Party member V. Ul'yanov, for example, recently presented a report on the topic "U.S. Imperialists -- Instigators of a Third World War." Considerable interest among military personnel was also aroused by a lecture on the present international status of the USSR and the tasks of personnel for increasing combat readiness.

Improving dissemination of military-technical knowledge, the unit regularly holds methods and technical conferences and question-answer evenings on efficient utilization, exemplary servicing and maintenance of communications equipment. Often practical realities suggest the topics of such evening events. Party member and communications expert Lt Col P. Shkel', for example, learned that some of the men had poorly mastered the material on the design and construction of a certain radio set. An evening event on the topic "Contemporary and Future Radio Communications Equipment" was held at the initiative of this vanguard officer. Personnel with excellent marks in training and high proficiency-rating specialists took active part in preparing for this interesting event, later demonstrating advanced field operating techniques on the actual equipment.

Question-and-answer evenings, theoretical and technical conferences, and other measures conducted in the unit help the officers gain a better understanding of the principles of Soviet military indoctrination and methods of personnel occupational training. This enriches command personnel with advanced know-how, which in turn has a positive effect on meeting combat and political training plan targets and strengthening discipline and combat readiness.

In the new training year the men are working with even greater zeal to improve their combat proficiency, are working to master their weapons and equipment, and are vigilantly guarding the interests of the homeland. The campaign for boosting proficiency rating, for mastering job duties one level above the position held, and for ensuring that there are no lagging performers alongside excellent-rated individuals is progressing successfully.

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FIGHTER PILOT MASTERS ADVANCED COMBAT MANEUVERS

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[Article, published under the heading "Marching in the Vanguard," by Maj A. Puchinskiy: "Third Sortie"]

[Text] The powerful missile-armed aircraft roared over the airfield and, describing an arc, surged skyward. An oblique loop, followed by a chandelle.... A roll, followed by another loop.... One aerobatic maneuver followed another. Everybody at the field was watching the aircraft intently. The combat pilot confidently executed the maneuvers. One had the feeling that the pilot and his aircraft had merged into a single entity. Here and there one could hear exclamations of approval.

Sr Lt Ye. Shalimov watched the fighter, transfixed. Mentally the young pilot was up there in the aircraft cockpit. He imagined that he was executing complicated aerobatic maneuvers together with squadron deputy commander Maj V. Maratkanov. Each was a combat maneuver enabling the pilot to take an advantageous position in relation to the adversary and to hit him with an unanticipated attack.

That which was now taking place in the air was a continuation, as it were, of a classroom session held on the previous day, when military pilot 1st class Major Maratkanov was telling the young officers about the specific features of utilization of this aircraft's flying capabilities in modern air combat. The officers has listened attentively to Vladimir Grigor'yevich, especially Sr Lt Yevgeniy Shalimov, for the squadron deputy commander was to go up dual with him on a check ride to test his execution of complex aerobatic maneuvers.

Major Maratkanov completed the series and a few minutes later brought the fighter in with a precision landing....

It was now time for military pilot 3rd class Shalimov to go up. He had consciously rehearsed the maneuvers in advance. During the practice session he

replied quickly and intelligently to the introduced scenario elements and responded well to them. The squadron deputy commander, who was checking him, was sure that the young officer would successfully accomplish the assigned task.

The aircraft rolled swiftly down the runway, lifted off, and climbed out in the direction of the practice area. The instructor's practiced eye noted even the slightest roughness in his student's flying technique, in maintaining the specified conditions, following the specified route profile, and was satisfied. One of the most critical phases of the flight was approaching -- demonstration of aerobatic maneuvers which would then be repeated by the student.

There was plenty he could learn from Major Maratkanov. Vladimir Grigor'yevich had thoroughly prepared for this flight. It was impossible correctly to execute the entire series without working on each individual maneuver.

After each flight the squadron deputy commander would always check his own calculations with the flight recorder data. If there were discrepancies, he would recalculate, until he came up with the only correct solution, which he would again test in the air.

But it is one thing to fly an aircraft oneself, and quite another thing altogether to pass on one's know-how to others, so that they can master all the finer points of flying technique as quickly as possible, totally understanding the physical essence of flying in various conditions, grasping the specific points of control and developing the requisite skills.

When studying theory, pilots learn the sequence of execution of aerobatic maneuvers, the manner and sequence of distributing attention, possible errors and ways of correcting them. Demonstration has been and continues to be, however, a most important element in teaching young pilots. In sequentially demonstrating flying procedures, the major briefly comments on them over the intercom.

...The next phase is separate practicing of maneuvers. A 360° banked turn with afterburner, a dive, steep climb, half roll, chandelle, Immelmann, and horizontal rolls. Senior Lieutenant Shalimov focuses his attention. That which instructor Yevgeniy demonstrated is clearly fixed in his memory, for it is a standard for comparison and emulation. One maneuver, followed by another.... Things were not going entirely smoothly. Sensing that his student was nervous, Major Maratkanov delayed making critical comments, but simply skillfully helped him correct an error. Things improved. On the whole the deputy commander was pleased with his student.

While Sr Lt Tech Serv A. Sherstnev and WO S. Andrianov were readying the combat trainer to go out again, Vladimir Grigor'yevich analyzed Shalimov's performance element by element, pointing out that he had operated the controls with abruptness on the 360° turns. To correct this, Major Maratkanov suggested that on the second time up he focus attention on precision of maintaining the specified parameters, while for himself he noted that there had been lacking in the air the requisite psychological contact between instructor and student, when one or two brief sentences suffice for the student to understand what the instructor wants.

...The fighter again headed for the practice area. In order for the senior lieutenant thoroughly to understand the substance of his mistakes, the instructor once again demonstrated proper execution of those elements he had mentioned on the ground. The young pilot carefully watched the instructor's actions. Results were immediate. This time there were no adverse comments about maintaining airspeed and moving the controls.

Senior Lieutenant Shalimov did, it is true, make another mistake: his airspeed dropped excessively when bringing the aircraft out of a steep climb. The squadron deputy commander mentioned this fact to his student during the subsequent critique. He also advised him to rotate the aircraft more vigorously when executing a roll.

Finally they went up for a third time. All comments and advice had been digested. The fighter, obedient to the pilot's firm hand, executed one maneuver after another. Mission accomplished in the practice area. The aircraft headed for home.

It would seem that now he could relax a bit. But Senior Lieutenant Shalimov pushed the thought from his mind. He knew that it was necessary to perform with equal precision and composure right up to touchdown.

Just as in the practice area, the pilot watched carefully to keep on his route profile, and he precisely maintained operating conditions. The dual trainer headed for the outer marker. Procedure turn. Down the glideslope. Touchdown.

Soon Senior Lieutenant Shalimov's comrades were congratulating him on his successful performance of advanced maneuvers. The officer's performance was rewarded with a mark of excellent. This also indicated that the instructor had been successful. Thanks to his methods skills, Senior Lieutenant Shalimov quickly understood where his mistakes lay and how to avoid them.

Extremely important in flying is a mutual desire by instructor and student to attain a single goal, plus diligence and a sense of responsibility. These qualities are characteristic in full measure of both Shalimov and particularly his instructor. Perhaps herein lies the secret of this young officer's rapid advance in skill.

Although rarely, one still sometimes hears the following comments from some young pilots: there is no place for precision execution of acrobatic maneuvers in actual air combat. Deviations in airspeed, angle of bank, and G-load are trivial matters. Major Maratkanov holds a different view. Making reference to the experience of combat veteran pilots and examples from daily combat training, he persistently works to instill in his men the idea that only he who possesses a mastery of the finer points of flying technique will be able to execute the most advantageous maneuver, will outfly his adversary and will score a kill on the very first pass.

Senior Lieutenant Shalimov is a comparatively young combat pilot. A bit more than 3 years ago he came to the unit upon graduating with distinction from a higher military aviation school for pilots. This officer's efficiency report read: "Shows great desire in his flying.... Does not become confused in

difficult situations. Calm, tactful, firm-minded...." Time showed that this was in fact the case. The young pilot quickly adjusted to the squadron and became a socialist competition right-flanker. A very memorable event also took place in this officer's life: the Communists of the primary party organization unanimously accepted Shalimov into their ranks.

A busy training year lies behind us. What did it bring to this senior lieutenant? It was a time of intensive combat training, active participation in subunit civic affairs, and a time of testing for flying and party maturity. He passed the examination with honor. The flights discussed above are confirmation of this.

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MECHANIC INADVERTENTLY SWITCHES ENGINE PARTS

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, Dec 83 (signed to press 1 Nov 83) p 29

[Article, published under the heading "In Aviation There Are No Trivial Matters," by Engr-Lt Col P. Karpenko and Engr-Maj Yu. Kuz'min: "Why Did Surging Develop?"]

[Text] Sr Lt A. Bravkov fired up the helicopter engine and noted that the tachometer and exhaust gas temperature gauge were giving high readings. The officer stopped running up the engine and shut it down, but he could determine from the characteristic sound that surging had occurred in the initial stage. An engine operating analysis recording confirmed his fears. The engine had to be removed and sent to the shop.

Experienced specialists, headed by Engr-Maj A. Svirin, reconstructed what had happened. The air jets of the automatic starter and the regulator pump signal sensor were to be inspected and washed as part of routine ground maintenance procedures. A sequence in performing this operation was devised: first the automatic starter jet was to be cleaned and installed, followed by the signal sensor jet. WO I. Zelenin, wanting to speed up the job, removed both jets at the same time. Externally they are very similar in size and shape. Having inspected and cleaned the jets, the maintenance specialist reinstalled them.

If Zelenin had rigorously followed inspection procedures, he would have checked the markings on the jets and would have returned them to their right place on the basis of the stamped numbers. But the warrant officer failed to do this.

Engineer-Major Svirin tested the automatic fuel system in various operating conditions and determined that its response was abnormal. An attempt to obtain normal response by adjustment failed to produce positive results. The excessive pressure of the fuel being fed into the engine could lead on engine startup to turbine blade overheating and surging.

After switching the nozzles and jets, operation returned to normal.

The reason for the engine malfunction had been found and the guilty parties established -- WO I. Zelenin, who through negligence had failed to follow proper maintenance operations procedures, and officer G. Shchegalev, who had carelessly

checked the mechanic's work. At a problem analysis session the regimental deputy commander for aviation engineer service related this incident to aviation engineer service personnel and analyzed in detail the mistakes in the actions of Zelenin and Shchegalev.

The aviation engineer service specialists drew the proper conclusions from the incident. For example, during helicopter maintenance they now regularly check engine operating parameters, which they mandatorily enter in the engine log. Helicopter operational checking is performed under the supervision of experienced subunit aviation engineer service supervisors, and regimental technical maintenance unit specialists are brought in for the most complex operations. These and other measures help avoid mistakes through the fault of aviation engineer service personnel.

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PHENOMENON OF 'BLACK LIGHTNING' DESCRIBED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, Dec 83 (signed to press 1 Nov 83) p 31

[Article, published under the heading "One Should Know This," by Doctor of Chemical Sciences Professor M. Dmitriyev: "Black Lightning"]

[Text] The term "black lightning" appeared comparatively recently in the scientific literature. The existence of this phenomenon in nature has been indicated both from observations and by scientific investigations in chemical physics of the air medium. The material traces of this type of lightning were also studied.

The problem of black lightning is becoming increasingly more important with the further evolution of aircraft and the increasing scale of aircraft utilization. In connection with this, aircrews must be familiar with its nature and properties, since an encounter with this phenomenon is quite probable.

It would seem that nonflashing lightning could not exist. Indeed, electrical discharges, and linear lightning in particular, as a rule are accompanied by the emission of numerous photons, and therefore cannot be black. Black lightning is by no means rare, however, among ball lightning discharges. This phenomenon is mentioned in manuscripts dating from classical antiquity.

Famed astronomer V. Chernov described rapidly-moving black lightning. It occurred on 23 June 1974 in the city of Zaporozhye, at approximately 1745 hours, during a severe thunderstorm accompanied by a heavy downpour. Its flight was quite noticeable against the gray cloud background. Initially conventional linear lightning flashed. Soon thereafter black lightning coursed alongside it. This spectacle startled the scientist by its unusual nature.

Col A. Bogdanov observed in the vicinity of Moscow, during the day, dark-brown lightning measuring 25-30 cm which seemed to float in midair. He was able clearly to describe that it consisted of a hazy blob of a metallic color. The lightning was of a somewhat reddish hue, surrounded by a faintly glowing dark-brown halo. Suddenly it proceeded to glow, assumed a round configuration, and burst.

Black lightning has been repeatedly observed in the form of excrescences or clumps of mud on trees, masts, roofs, and metal surfaces. When an attempt was made to strike them with some object or pull them off, they would proceed to glow and burst.

How is the phenomenon of black lightning explained? One theory is based on the concept of molecular-aerosol clusters. They develop in the atmosphere as a result of protracted effect on the air by the sun, cosmic rays, the electrical fields of clouds, linear lightning, and other physicochemical factors. Chemically active particles, positively and negatively charged ions and aerosols are formed. Under certain conditions concentration of these particles is possible, initially into condensation nuclei and subsequently into molecular-aerosol clusters. The chemically active particles and substances which have accumulated in them can react with one another, which causes the cluster to heat up. It assumes a relatively spherical shape and becomes transformed into flaming ball lightning, which may burst.

Ball lightning cannot exist in a luminous state for more than 2 minutes, while black lightning "lives" much longer and not infrequently settles onto the surface of various objects. It is not visible at night. Radar is poor at recording its presence. Black lightning can easily be taken to be a bird in flight or some object.

One can encounter black lightning even where thunderstorm activity is theoretically impossible. It is noteworthy that in most instances, when an aircraft approaches such lightning it either turns into ball lightning or bursts.

Requiring particular attention is black lightning which settles onto the surface of aircraft (on the ground or airborne), electronic equipment, and on the tank walls of fuel tanker trucks. No attempt should be made to remove or destroy them, since they soon transform into ball lightning or burst, which represents a considerable danger. One should wait or take measures to avoid an encounter with black lightning.

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PROBABILITY OF ENCOUNTERING WAKE TURBULENCE ON FINAL APPROACH COMPUTED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, Dec 83 (signed to press 1 Nov 83) pp 32-33

[Article, published under the heading "Constant Attention to Flight Safety," by Candidate of Technical Sciences and Docent Engr-Col G. Rayevskiy: "Wake Turbulence in Planning the Landing Approach"]

[Text] A turbulent wake, a zone of disturbed air, forms behind any aircraft in flight. This wake generates significant rolling and turning moments, shaking, and considerably changes load factors. Periodicals have contained many articles dealing with investigation of this phenomenon. The journal AVIATSIYA I KOSMONAVTIKA has also carried such articles.

Following flight experiments and theoretical investigations, experts gave recommendations on ensuring the operational safety of flight crews operating aircraft of various types. Cases of entry into wake turbulence are still encountered, however. Tower controllers, flight and engineer-technician personnel must be thoroughly familiar with its effect on an aircraft, especially during approach and landing. This is due to the following factors.

Close proximity to the ground during the approach and landing phases means that a safe landing does not always ensue in such cases. Comparatively slow air-speeds and high angles of attack diminish the effectiveness of aircraft controls. The fact that little time is available to refine landing calculations demands exceptionally precise maintenance of flight path and parameters. Descent profile, aircraft configuration, and engine operating conditions change, and there is an increase in intensity of radio communications and volume of information received, which as a rule increases psychophysiological stresses on the pilot (crew).

The simplest means of eliminating cases of entering wake turbulence is to increase spacings between landing aircraft. In military aviation, however, it is frequently necessary to land a large number of aircraft in a limited period of time. Chance close approaches by aircraft on the landing approach descent are also possible.

In order to determine the probability of entering wake turbulence, it is necessary to be familiar with its characteristics. The principal disturbance factor

in an aircraft's wake zone is the vortices which form from the vortex sheet leaving the wing. Their most important indices are persistence time and vertical settling rate. Turbulent wake behind fighters and fighter-bombers lasts 30-60 seconds, and 2-3 minutes or more behind heavy transport aircraft and bombers. The vertical "settling" rate of the vortices may range from 1 to 5 m/s or more, depending on type of aircraft, airspeed, load factor, and a number of other factors.

It is also necessary to know the envelope of possible approach descent paths (Figure 1). It is plotted proceeding from the laws of flight path variance in height and course in several profiles, running from the end of the turn onto final to points of touchdown.

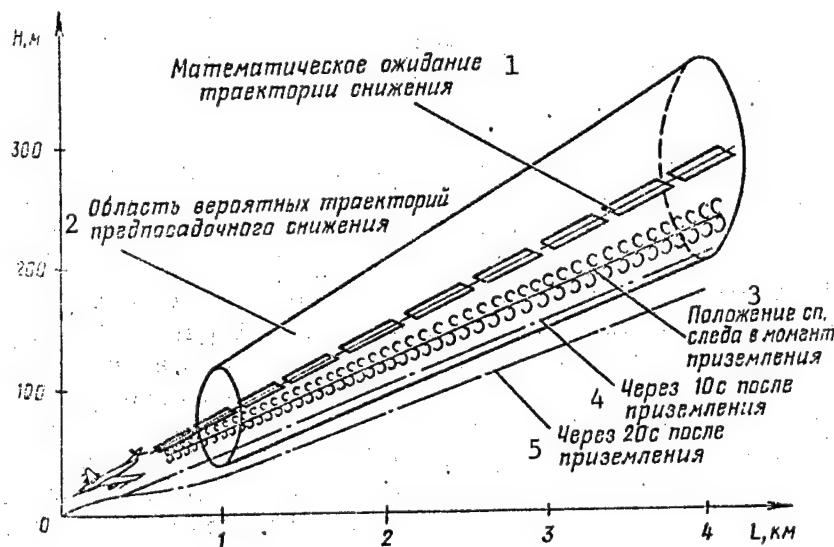


Figure 1.

Key:

- | | |
|--|--|
| 1. Mathematical expectation of descent path | 3. Position of wake at moment of touchdown |
| 2. Envelope of probable approach descent paths | 4. 10 seconds after touchdown |
| | 5. 20 seconds after touchdown |

Let us determine the mathematical expectation of turbulent wake residence time in the envelope of possible final approach paths. We can assume that a pilot's error in maintaining glidepath is a random quantity governed by normal distribution law. Wake residence time in the descent path envelope is also a random quantity, which we determine with the following formula:

$$t = \frac{H_{\phi} - H_{w,pp}}{V_y} = \frac{\Delta H}{V_y},$$

where H_{ϕ} -- aircraft actual height above ground level in a given reference cross section; $H_{w,pp}$ -- height agl of the lower boundary of the envelope of descent paths in that same cross section; ΔH -- difference in heights agl

between aircraft's flight path and the lower boundary of the descent path envelope; V_y -- wake settling rate.

In the formula ΔH is a random quantity. V_y can be considered a constant for an aircraft of a given type with a specified configuration and airspeed. With a more rigorous approach one must consider the fact that it decreases in time. In this case one can use V_{ycp} .

A linear function of an argument governed by normal distribution law is also governed by it. Consequently, knowing the probability characteristics of height of passage through a given cross section, we shall also determine the probability characteristics of wake residence time in the given cross section. The mathematical expectation of this time will be determined with the formula:

$$m_t^* = \frac{m_h^* - H_{n, rp}}{V_{ycp}},$$

where m_t^* -- mathematical expectation of wake residence time in a specified cross section; m_h^* -- mathematical expectation of glidepath in a given cross section; V_{ycp} -- average rate of wake settling.

Calculations indicate that on final from the pattern, in a final approach descent path envelope encompassing 96 percent of flight paths, m_t^* varies from 26 seconds in the vicinity of the middle marker to 46 seconds in the vicinity of the outer marker. It decreases as an aircraft approaches the runway. If we consider the entire envelope of final approach paths (with an accuracy to fractions of a percent), m_t^* will increase to 40 seconds by the middle marker and to 70 seconds by the outer marker. One should bear in mind that during landing by certain aircraft even in wind-still conditions, wake turbulence can completely dissipate during this time.

To determine the probability that an aircraft will enter wake turbulence, we shall proceed from the following conditions. The spread of aircraft final approach paths is governed by the normal distribution law (an actual distribution law has an asymmetry and excess other than zero). The pilot of a trailing aircraft flies his final approach without estimating the position of the wake of the aircraft ahead of him, which in general is correct. The aircraft is taken as a point.

Let us examine any cross section of an approach path dispersion ellipse at a distance of less than 1 kilometer. The dimensions of the ellipse in this case are commensurate with the dimensions of an aircraft which will enter the wake turbulence if the lead (first) aircraft passes through region R_1 (Figure 2a), and the trailing (second) aircraft passes through R_2 (Figure 2b).

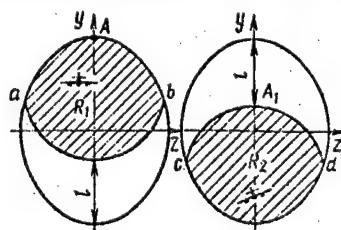


Figure 2a. Figure 2b.

This is due to the following. If the first aircraft passes below line a-b, the aircraft's wake will pass out of the approach path dispersion ellipse during specified time interval t (will settle by distance $I = V_{ycp} \times t$). The trailing aircraft can enter the wake only below line c-d: when the first aircraft passes at the highest point of the ellipse of dispersion (point A), its wake will descend by distance I , and contact with the wake is possible in the area of point A_1 .

At considerable distances from the runway threshold, the dimensions of the aircraft are much smaller than those of the ellipses of dispersion: its vertical semiaxis is more than 120 m at a distance of 4 km. In this case another method, which we shall not discuss, is used to estimate the probability of entering wake turbulence.

A crosswind drifts wake turbulence laterally. If we know wind velocity V_{zB} , we can also determine the distance of its movement along axis OZ:

$$l_B = V_{zB} \times t,$$

where l_B -- wake drift distance along axis; V_{zB} -- velocity of crosswind or crosswind component; t -- time spacing between aircraft on final.

Region R_1 , through which the first aircraft must pass in order for the trailing aircraft to enter its wake, will decrease somewhat (in Figure 3a it is bounded by curve a'-b' and shaded). Region R_2 (in Figure 3b bounded by curve c'-d') will displace in the direction of the wind and will also decrease somewhat in comparison with region R_2 in its absence. An increase in crosswind velocity decreases the probability of aircraft entry into turbulent wake. With a certain crosswind component V_{zB} and specified spacing t between aircraft on final, region R_2 may be outside the flight path dispersion ellipse. We have not considered a case where, in the presence of a crosswind, one of the vortex trails "hangs" in the aircraft flare area (ground effect), while the other drifts laterally.

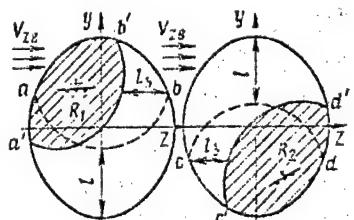


Figure 3a. Figure 3b.

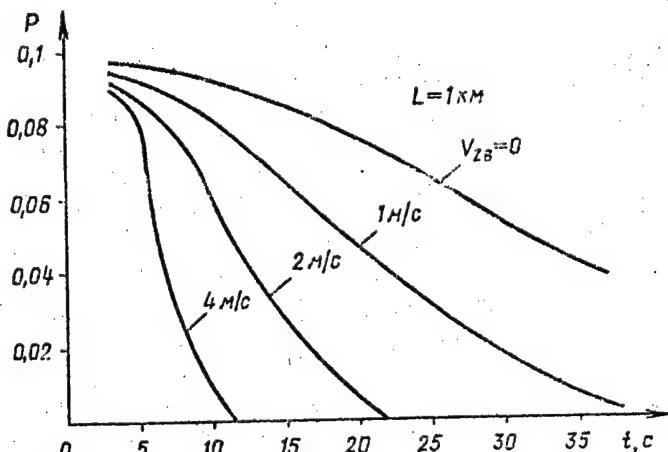


Figure 4.

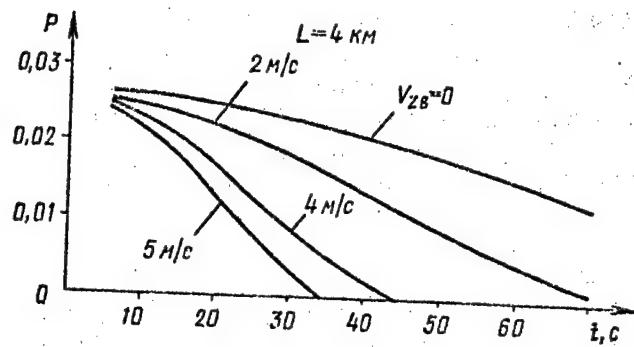


Figure 5.

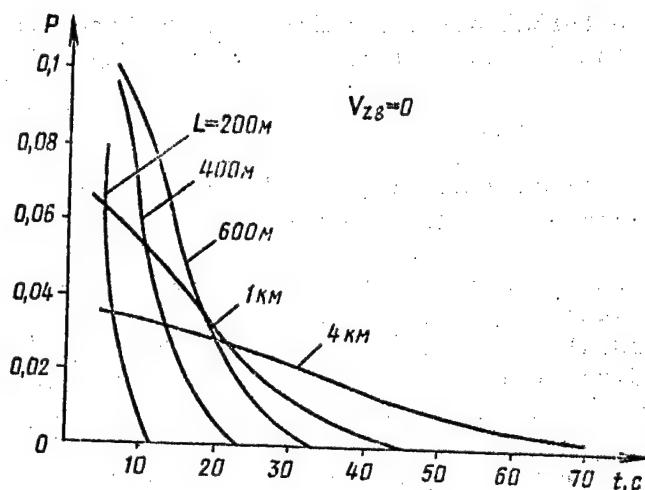


Figure 6.

Calculations of the probability of an aircraft entering wake turbulence with various t and V_{ZB} are shown in figures 4 and 5. The time spacing between aircraft on final approach is laid out on the X axis, and probability of entering wake turbulence -- on the Y axis. The calculations are for distances of 1 and 4 km from the runway threshold. It is evident from the diagrams that probability of encountering wake turbulence increases with a decrease in time spacings. When $t=40$ seconds, at a distance of 1 kilometer from the runway threshold, with no crosswind component, probability of encountering wake turbulence approaches zero, while when $t=20$ seconds it approaches 0.03 (Figure 4). This means that of every 100 aircraft on final approach behind another aircraft, three may encounter wake turbulence. With a shortening of the time interval to 5 seconds, probability of encountering wake turbulence increases to 0.062 -- 6 aircraft may encounter wake turbulence.

Wind considerably affects wake turbulence. Breaking up the vortices, it not only diminishes the intensity of effect of wake turbulence on an aircraft encountering it, but also carries it out of the envelope of probable flight paths. For example, with a crosswind component of 3 m/s at a distance of 1 kilometer from the runway threshold, probability of encountering wake turbulence when $t=12$ seconds is zero. In other words, the time spacing at which an aircraft

may encounter wake turbulence will diminish by a factor of 3.3 in comparison with no-wind conditions. The obtained results give reason to conclude that with a crosswind component of 4 m/s and more, the probability of encountering wake turbulence on final approach when $t=18$ seconds is zero (at a distance of 4 km from the runway).

The curve in Figure 6 shows the probability that an aircraft will encounter wake turbulence in relation to the time separation between aircraft at various distances from the runway threshold, in the absence of a crosswind component. When $t=10$ seconds, at a distance of 4 km from the runway threshold it is 0.034, while at a distance of 600 meters it is 0.083. This means that approximately 8 out of 100 aircraft may encounter wake turbulence. At the same time, when $t=33$ seconds, at a distance of 600 meters it is impossible: the wake will leave the envelope of probable flight paths (ellipse of dispersion).

In order not to encounter wake turbulence on the final approach, the pilot (crew) should closely monitor radio communications, examine the envelope of approach paths, and observe the requisite separations. Upon encountering wake turbulence, the pilot should report this fact to the tower and initiate a go-around. The pilot must be prepared to counter a sudden rolling of his aircraft.

When encountering wake turbulence during an attack pass, the pilot may lose the target and lose spatial orientation (especially in bad weather or at night). In this case it is advisable to switch on the autopilot or automatic control system in wing leveling mode. When the aircraft is in horizontal flight, the pilot should resume looking for the target. If the pilot has correctly determined the aircraft's spatial attitude after exiting from wake turbulence, he should put the aircraft into horizontal flight manually and continue looking for the target, with subsequent attack pass.

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PROBLEMS IN HELICOPTER MAINTENANCE AND PERSONNEL INDOCTRINATION

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, Dec 83 (signed to press 1 Nov 83) pp 34-35

[Article, published under the heading "Know-How of the Best Into the Combat Arsenal," by Lt Col G. Spiridonov: "Both Engineer and Indoctrinator"]

[Text] The members of the state examining board and the other officers present during the defense of senior projects at the Kiev Higher Air Force Engineering School listened particularly attentively to Sr Lt Tech Serv Boris Denisovich Dudka. Standing at the formula-filled blackboard, he was nervous at first, but gradually calmed somewhat. His nervousness was due to the fact that this officer had chosen for his senior project a difficult and problematic topic, entering into an area in which he, a helicopter flight technician, was very interested.

As we know, certain aircraft instruments -- altimeter, rate-of-climb indicator, and others -- have an inherent delay in showing change in flight parameters or engine operating conditions. The reasons for this are well known, and engineers are endeavoring to find a way to eliminate this delay. There are various hypotheses and proposed solutions. Officer Dudka decided to examine in detail one of the methods of inertialess sensing of parameters and to demonstrate its promise and advantages over other methods. This candidate for an engineering diploma required thorough preparation in theory and the ability to debate with experienced opponents and to defend his views.

Boris Denisovich handled the defense brilliantly. The members of the examining board were unanimous in giving him a mark of excellent. As one of the best specialists, he was assigned to a supervisory position in a helicopter regiment.

The squadron in which B. Dudka was assigned the position of deputy commander for aviation engineer service performed difficult missions involving the hauling of cargo and passengers. Transport helicopter crews frequently worked far from their regular base. This brought specific features to aviation engineer service activities. It was necessary to revise training and maintenance schedules in order not to diminish the quality of the training process, to step up inspection and preventive maintenance aimed at increasing helicopter operational reliability. Engr-Capt B. Dudka, flight technical maintenance unit and

maintenance group chiefs officers V. Pravednikov and A. Artyukhov, in addition to this, did a good deal of indoctrination work. In individual and group discussions as well as at conferences, they regularly raised the questions of independence and initiative, as well as increased aviation personnel personal responsibility for carrying out their military duty. They skillfully employed moral incentive to encourage excellent performers, and they never ignored misdeeds, for the cost of mistakes engendered by the ignorance, lack of training or lack of discipline on the part of even a single serviceman is too high.

...During maintenance procedures on the helicopter assigned to Capt Tech Serv A. Pashchenko, the radiomen had in their haste made wrong plug connections in the automatic flight control system. A defect showed up on the check flight. The crew would have had a hard time of it on a long cross-country flight. There exists an entire verification system aimed at preventing such mistakes. Why had it not worked?

Although this incident had taken place in the neighboring subunit, it became the subject of serious discussion in Engr-Capt Dudka's squadron. Party members suggested improving organization of training drills on the ramp, especially at dusk and at night, improving the quality of operation-by-operation verification and cross-inspections, and disseminating the know-how of leading technicians, such as socialist competition right-flanker Capt Tech Serv G. Petrov. The squadron deputy commander for aviation engineer service took note of all valuable items in those things suggested, in order to put them into practice in the immediate future.

Officer Dudka adheres to a firm rule: be highly demanding not only on the less experienced technicians and mechanics but also on the most proficient ones. It happened more than once that, when inspecting the helicopter of a well-respected maintenance specialist, he would lower the mark even for what would seem to be an insignificant departure from the requirements of aviation engineer service regulations or maintenance instructions. For example, he sternly reprimanded WO N. Zharov for failing to ground the vehicle properly when fueling a helicopter. And when this warrant officer failed to correct his mistake, the engineer put him on report. He demanded that all maintenance specialists observe safety procedures to the letter. In time this young deputy commander for aviation engineer service gained the men's understanding and support.

The squadron made upgraded pledges in the campaign for a rating of excellent -- to ready and maintain equipment at a high level of quality exclusively, and not to have malfunctions and near-accident situations through the fault of personnel. Firm military discipline became a reliable assistant to these aviation personnel. It is true that some maintenance specialists believed they were infallible, and yet it is a known fact that it is merely one step from presumption to mistake.

Once a veteran maintenance technician went to Boris Denisovich: "We are test-running this engine, and throttle response is poor."

"What do you think the problem is? What do you suggest be done?" Engineer-Captain Dudka asked.

"Send it back to the shop and replace the regulator pump or rpm synchronizer," the maintenance technician confidently replied.

"Please verify your decision."

The engineer could see as the maintenance technician explained the problem that his analysis of the problem was superficial and his conclusion probably incorrect. To make sure, he asked several questions. The replies to these questions indicated that the maintenance specialist had forgotten certain peculiarities of the physical processes which take place in the automatic fuel system. When the engineer brought this to his attention, the technician felt insulted: according to him, there could be no mistake.

Boris Denisovich solved this maintenance problem fairly quickly. As a flight technician, he had encountered such a problem in the past. Failure by the engine to reach high rpm was caused by the fact that as a result of the weakening of the valve spring, fuel was additionally flowing through the regulator pump constant pressure valve.

Taking a simple tool to release the valve, the engineer-captain inserted it into the regulator assembly housing. A characteristic click was heard, indicating that the valve had gone to extreme position.

"Run up the engine again and check engine response," Dudka ordered. "Then we shall continue our conversation."

This time the powerplant showed no aberrations. The embarrassed maintenance technician was forced to admit that he was wrong. Engineer-Captain Dudka did not reproach him for incompetence, although he had every right to do so. He tactfully and calmly counseled the maintenance specialist on where he should focus his attention in studying the fuel system.

"During your helicopter's next inspection, tell me how the automatic control system is operating," he instructed the technician.

Incidentally, such a conversation did in fact take place. On the surface it was a two-way conversation, but in actual fact it was a test. The officer had prepared well for it and displayed thorough knowledge. Most important, he had become more exacting on himself and on his training.

Sensitivity and tactfulness in combination with implacability toward deficiencies, flawless knowledge of the equipment and the duties of all squadron personnel earned the deputy commander for aviation engineer service respect and recognition. The subunit's Communists unanimously elected Boris Denisovich party buro secretary. As a party official, he also proved to be a genuine engineer of men's souls. He had the ability to give everybody a word of support at a difficult moment, as well as good advice. He has thoroughly studied the professional and moral-psychological qualities of the maintenance technicians and mechanics and has the ability to come to their assistance at the right moment.

Once the engineer-captain noticed that one of the officers seemed depressed. He was working without enthusiasm, without initiative or spirit, seemed un-anxious to communicate with others, and was passive at technical analysis discussions. Dudka attempted to get him to say what was bothering him, but was unsuccessful. Once this officer violated procedures during preliminary preparation for flight operations. The engineer demanded an explanation. He then learned that his subordinate was having family problems.

At the very first opportunity Boris Denisovich visited the officer's home, spoke with his wife, and helped him repair relationships. B. Dudka spoke with this officer on several occasions, under various circumstances. Gradually the maintenance technician perked up. His job performance improved, and peace and harmony returned to his family.

The deputy commander for aviation engineer service also frequently visits the dormitory housing the younger officers. At one time he, as well as the other members of the methods council, was concerned by the fact that the young officers were spending their leisure time in a boring, uninteresting manner. Finding nothing worthwhile to occupy their time, some of them began drinking. Engineer-Captain Dudka went to the command authorities and raised the question of improving work with young personnel. A pretty fair athlete himself, he took the initiative in organizing athletic activities and got the younger officers to take part. Amateur talent activities improved. The officers also were enthusiastic about the group nature excursions which aviation engineer service supervisors organized. The methods council enlisted lieutenants to do indoctrination work with enlisted personnel and NCOs and to publicize the glorious fighting traditions of the Air Forces.

Of course the engineer cannot possibly have ready recipes for every life situation. But he always relies on the support of party activists and other party members. Officer G. Fedorov, for example, had frequently violated military discipline. He was summoned to a party buro meeting. The Communists stated the complaints against this comrade in a firm and party-minded manner and compelled him to alter his conduct.

We must admit that not all aviation engineer service supervisors readily and willingly engage in indoctrination work and use the recommendations of military education science and psychology. For these individuals the main thing is that personnel be familiar with and carry out their job duties. Boris Denisovich demands that each and every officer feel responsible for the ideological conviction of his subordinates and thoroughly understand party and government policy. He frequently recalls a statement by CPSU Central Committee General Secretary Comrade Yu. V. Andropov: "...The party seeks to ensure that a person is educated in this country not simply as a bearer of a certain sum total of knowledge, but first and foremost as a citizen of the socialist society, an active builder of communism, with his inherent ideological principles, ethics and interests, and a high competence level in labor and conduct."

Among officer B. Dudka's men there are many specialists possessing a high degree of technical knowledgeability, such as master-rated flight technicians A. Zhakota,

V. Pravednikov, and others. He relies on them in his work with personnel and uses them as an example in teaching young personnel to develop in themselves the finest qualities of a worker and Soviet patriot, which were discussed in detail at the June (1983) CPSU Central Committee Plenum.

* * *

Happy developments took place in B. D. Dudka's life as this article was being readied for publication. He received a promotion in rank to engineer-major. Boris Denisovich was also promoted to a higher position -- he was designated regimental helicopter and powerplant engineer.

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REGIMENT SEEKS TO IMPROVE DISCIPLINE, OBSERVANCE OF REGULATIONS

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, Dec 83 (signed to press 1 Nov 83) pp 38-39

[Article by regimental commander Col N. Minakov: "The Collective is Strong Through Discipline"]

[Text] Practical realities convincingly affirm the correctness of Lenin's statement that without iron discipline there can be no victory over the enemy. This is also indicated by numerous examples from the war. It frequently happened that in the most difficult combat encounters and crisis situations it was precisely firm discipline and a high degree of organization which enabled Soviet fighting men to defeat an adversary who was superior in numbers and armament.

The importance of military discipline has increased to an even greater extent in present-day conditions. This is dictated first and foremost by the radical changes which have taken place in military affairs, in the means and modes of conduct of warfare. Discipline is that core on which rest high results in combat and political training, precise organization of military service activities, and firm internal order and discipline. Its level is clearly indicated by the degree of proficiency and coordination of subunits, effectiveness of indoctrination work in a collective, and the results of the activities of command authorities, party and Komsomol organizations.

For several years in a row now the signal battalion under the command of Maj V. Afanas'yev has borne the rating of excellent, and our other subunits measure their performance against it. Our men also achieved new performance heights in military labor in this past training year. The subunit again placed high in socialist competition. These military communications personnel achieved excellent results primarily because the companies have long since eradicated serious violations of discipline, and the men have learned precise order and discipline. Absolute obedience to superiors has become the standard of conduct for each and every man. There prevails in the battalion an atmosphere of high demandingness and exactingness toward military personnel, and there is strict observance of chain of command and standards of behavior both on and off duty. The force of community influence on lagging performers is also considerable. This produces gratifying results. Maj V. Afanas'yev, his deputies,

and party activists constantly inquire about how officers are combining high demandingness toward their subordinates with active personal participation in political indoctrination work and disciplinary practices, and help them thoroughly analyze the causes of specific violations and to find the correct ways and methods of ensuring firm observance of regulations in the subunit. All this enables the commanding officer to concentrate the efforts of his men on unresolved problems in a prompt and timely manner and skillfully to utilize hidden reserve potential.

The situation is different in the battalion in which officer O. Karpenko serves as political worker. In this battalion there occur departures from the requirements of regulations. For example, the men of the company under the command of Capt I. Fedorkov, in which Lt V. Ignatov is political worker, at the present time have inadequate knowledge of and of course inadequately carry out the demands of regulations. In the past training year Capt I. Fedorkov and some of the platoon commanders did not always consistently work for conscientious study and implementation of regulations. During training classes and drills they sometimes would forget to stress the importance of exemplary observance of these points for successful accomplishment of combat training tasks, for surpassing performance standards and high-quality performance of alert duty, guard duty, routine garrison duty and administration within the unit.

The regimental command and party committee promptly drew the attention of the company's officers to deficiencies in their activities and reminded Fedorkov, Ignatov, and others that forgetting even for a short time the need to explain to the men the importance of the military oath and regulations and an attempt to substitute merely administrative measures for this work inevitably lead to weakening of discipline. At the same time unit headquarters proceeded more closely to monitor the organization and conduct of training classes for subunit personnel and employment of correct training methods. An instructor methods class was held for platoon commanders, on the topic "How to Incorporate Points of Regulations Into the Training and Indoctrination Process."

Having discovered deficiencies in this subunit, the unit propagandist and staff officers spoke in other companies, presenting lectures and reports on the nature of Soviet military discipline and on the importance of the strictest follow-through in modern combat. The officers were benefited by a discussion of Leninist work style.

In discussing this subject, I must mention my assumption of duties as regimental commander. Col Nikolay Ivanovich Trifonov, who was assuming reserve status after a long career of active military service, said to me as he handed over the regiment: "I wish you success. I want to remind you that discipline is the core of all military service. If it is strong, success will be achieved."

Soon I learned how right he had been.

Indeed, a great deal depends on organization of the training and indoctrination process on a rigorous foundation of observance of regulations and on the follow-through of one's men. I must note that the majority of the men in our regiment are conscientious and disciplined. They have the ability to work selflessly and

are not accustomed to wasting training time and failing to keep their word. It is this which enables them to advance from one performance level to the next, to achieve new success in further increasing the combat readiness of crews, duty shifts and subunits. These communications personnel, however, are not resting on their laurels. They have resolved to reconfirm the rating of excellent and to accomplish with honor the socialist pledges made for the new training year.

Implementing the decisions of the 26th CPSU Congress and subsequent Central Committee plenums, and the instructions of CPSU Central Committee General Secretary Comrade Yu. V. Andropov on further strengthening national defense and increasing the combat readiness of the Soviet Armed Forces, our regiment's commanders and political workers, supported by the party and Komsomol organizations, have commenced more purposefully conducting political and military indoctrination and to campaign more aggressively for strict adherence to the demands of regulations.

Exemplary military order is maintained in the subunit under the command of Maj N. Starodubov. Combat training, personnel daily life and routine are organized in conformity with regulations and official instructions. The quarters of enlisted personnel and noncommissioned officers are clean and comfortable. Training classrooms contain working models and other unique training aids.

Firm observance of regulations and organization have been achieved thanks to thorough planning of combat and political training and maintaining a precise daily regimen, in which the requisite time is allocated for training, personnel rest and recreation, and conduct of party-political work. An important role is also played by continuous monitoring of performance of guard duty and routine garrison duty. Officer Starodubov skillfully relies on the party and Komsomol organizations and makes every effort to increase and support their initiative.

The subunit has long been a leader in socialist competition, achieves consistently high results in training and discipline, and firmly retains a rating of excellent. The collective is characterized by commitment to the common success, mutual demandingness, comradely cohesiveness, follow-through, and honesty. The men listen with interest to explanation by subunit party members of the provisions of the USSR Constitution, Soviet laws, and stories about how iron discipline helped combat signal troops carry out critical combat missions with honor and smash the fascist invaders.

In strengthening military order and discipline, the commander is demanding on his officers, warrant officers, and sergeants, seeking to obtain from them efficient execution of orders and instructions, and indoctrinates them in a spirit of implacability toward the slightest deviations from the provisions of regulations and the military oath. Master-rated communications specialist Major Starodubov and other officers regularly monitor organization of combat training, routine garrison duty, help the men correct deficiencies on the spot, and teach through personal example how one should maintain observance of regulations and carry out the demands of the military oath, orders and instructions.

The value of the experience and know-how amassed here lies in the fact that training is conducted in a differentiated manner and encompasses all commanders, who play an exceptionally important role in improving indoctrination work with individuals. Particular attention is directed toward studying living conditions and upbringing of military personnel prior to conscription into the military. Constant contacts are maintained with parents, workforces, and military commissariats for this purpose.

In light of the instructions of the USSR minister of defense, we attach great importance, in developing discipline and follow-through, to drill, inspections, and monthly battalion and regimental evening formations. The regimental party committee also devotes constant attention to this. Recently it has discussed the following topics at its meetings: "Tasks of Communists in Further Strengthening Personnel Discipline," "Indoctrinal Role of Military Ceremonies," and "Party Committee Measures to Intensify Propaganda of the Demands of the Military Oath and Regulations."

Personal exemplariness on the part of Communists and Komsomol members in strengthening military discipline and improving job performance is regularly discussed at party and Komsomol meetings.

The demands of the military oath and regulations are regularly publicized in the regiment. Many forms and methods are used. An agitation and propaganda group under the auspices of the unit party committee is doing an effective job. Lectures and reports have been presented to officers and warrant officers on the following topics: "The 26th CPSU Congress on the Need for a High Degree of Organization and Discipline," "The Military Oath and Regulations -- Law Governing the Lives of Soviet Servicemen," "Forming Communist Societal Relations," "Obedience -- The Heart and Soul of Military Service," plus others.

The demands of regulations are widely publicized in visual agitation materials. Every subunit contains display stands entitled "V. I. Lenin -- Founder of the Soviet Armed Forces," "The Serviceman's Oath of Allegiance to the Homeland," "Follow Regulations -- Gain Honor and Fame," and "Guard Duty -- Performance of a Combat Mission." Matters pertaining to campaigning for firm military order and discipline are regularly examined within the Marxist-Leninist training system and at political instruction classes. Headquarters party members regularly present to political training group instructors an analysis of the state of military discipline and recommend to them how the demands of regulations and the military oath can be publicized more vividly and clearly.

We should note that regardless of what item is discussed at any meeting, conference, seminar, or instructor methods class, staff officers always discuss the state of discipline in the unit. In our unit we constantly bear in mind the instructions by USSR Minister of Defense MSU D. F. Ustinov, member of the CPSU Central Committee Politburo, to the effect that we should handle all matters connected with strengthening discipline in an organic unity with tasks of increasing combat readiness and combat improvement of subunits, units, and naval ships. We conduct indoctrination from this standpoint.

The commander, an organizer of the training and indoctrination process and possessing complete authority, is called upon to implement party decisions and instructions by the USSR minister of defense. Together with his deputies, supported by the party and Komsomol organizations, he provides well conceived planning and scheduling of training and personnel duty activities, as well as unconditional execution of specified plans. The attitude of subordinates toward their job, their follow-through, and the results of the military labor of the unit as a whole also depend on his competence, demandingness, and how deeply and exactingly he implements verification. Proceeding from this, regimental headquarters and the party committee as well as leader-Communists are constantly concerned with improving the level of occupational training, the competence, responsibility, development of organizer abilities and improving the work style of the subunit commanders. When reviewing results of combat and political training for the month or period of training, one synthesizes in detail the work experience of the leading officers and thoroughly analyzes the mistakes and errors of omission in the activities of those command personnel who have failed to achieve a high level of discipline in those under them.

In those subunits where this is constantly borne in mind, organizing and indoctrination work is conducted in a more substantive manner and produces positive results. This is the case, for example, in the platoon led by officer I. Gritsay. Supported by his sergeants and Komsomol group, by means of daily demandingness on his subordinates he has ensured that the men maintain exemplary observance of military regulations. His men are always productively busy, are successfully mastering combat skills, intelligently utilize their off-duty time, and enthusiastically engage in athletic activities.

Party member Gritsay shows his men an example worthy of emulation. Enlisted personnel, NCOs and warrant officers learn follow-through and professional expertise from him, and see in his every action a model of rigorous and precise observance of laws, the military oath, regulations, orders and instructions, and standards of Communist ethics and morality. The commander's personal example in training and performance of duty and his firm will in imposing proper observance of regulations help ensure that things go well in the platoon. For a long time now there have been no serious violations of discipline, while the overwhelming majority of men are excellent-rated in combat and political training, are high proficiency-rating specialists, category-rated athletes, and Military Sports Complex badgeholders.

Our regiment is rich in such examples. They confirm that the key in the campaign for firm observance of regulations, solid discipline, and excellent results in combat and political training lies in daily, fair-minded demandingness by the commander on his men and his ability to indoctrinate others. These qualities are defined by the principles of the Leninist style of leadership and constitute a standard of behavior for the Soviet officer and his relations with superiors and subordinates. Party members A. Volkov, V. Yefanov, V. Kolchanov, A. Klepikov, and other senior comrades are constantly reminding us of this.

Internal order in the barracks, classrooms and training facilities, and motor pools, as well as the state of job performance by the men depend to a considerable degree on the subunit NCOs. If the squad leader, deputy platoon commander, and company sergeant major work persistently to ensure that the men

observe all regulations, personnel as a rule perform their job duties with precision and in an organized manner. Company ranking NCO Sr WO A. Kubrakov is a demanding and conscientious superior. He is thoroughly familiar with his duties and has a party-minded attitude toward their performance. He always plans everything down to the smallest details. Hence his excellent job performance.

In our regiment indoctrination and training of sergeants constantly occupies the center of attention of command authorities, the party and Komsomol organizations. The majority of lower-echelon commanders have a good mastery of their occupational specialty. But some of them have not yet acquired solid commander skills. Therefore it is important to do everything possible to ensure that constant demandingness on our NCOs is combined with concern with their indoctrination and development as genuine, full-authority commanders. A school of advanced know-how has been organized for sergeants in this regiment, and lectures are presented on problems of military indoctrination and teaching skills. Lectures on the following topics have been presented to date: "Problems of Military Indoctrination and Strengthening Discipline," and "On the Work Style of the Subunit Ranking NCO in Ensuring Firm Observance of Regulations."

A great deal has been done in the regiment to maintain firm observance of regulations. In the new training year we are concentrating our efforts on further strengthening military discipline, which will help us achieve new successes in combat and political training.

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ADVANCES IN SPACE-BASED RADIO TELESCOPES DESCRIBED

Moscow AVIATSIYA I KOSMONAVTIKA in Russian No 12, Dec 83 (signed to press 1 Nov 83) pp 40-41

[Article, published under the heading "The Space Program Serving Science," by Yu. Zaytsev, department chief, USSR Academy of Sciences Institute of Space Research: "Telescopes in Space" (second of two parts: first part appeared in No 11, 1983)]

[Text] Observations in the ultraviolet region of the spectrum are a natural continuation of Earth-based optical astronomy, but only at the shorter wavelengths. They are essential for investigating the properties of young, hot stars, the galactic gaseous medium, and for determining the spatial structure of distribution of gas in interstellar space. This is important for determining the dynamics of the formation of stars, protoplanetary systems, and protostellar clouds. Extensive catalogues of ultraviolet stars have been compiled to date, and their spectra have been studied.

Thick chromospheres surrounding cold stars have been discovered and investigated with the aid of the Orion ultraviolet telescope carried by the Salyut orbital station. Only the Sun had previously been known to possess a chromosphere (a layer of very hot gas surrounding a star). We now know that cold stars, the intrinsic temperature of which ranges from 3000 to 4000 degrees, possess a chromosphere with a temperature of 10-20 thousand degrees. It is believed that unusual physical conditions in the chromosphere are a consequence of nuclear processes taking place in the exterior clouds of a star.

Groups of hot stars of very low luminosity, so-called ultraviolet stars of obscure nature, have also been discovered.

An ultraviolet spectrogram of a planetary nebula has been obtained for the first time. This is a gigantic gaseous structure with a very hot star in the center. Analysis of the spectrogram has made it possible to identify three elements heretofore not detected in planetary nebulae -- magnesium, aluminum, and titanium. We should note that in the preceding 50 years of study of such nebulas by ground-based methods, only 16 elements were discovered, while not a single new element was discovered in the last quarter of a century.

The greatest quantity of energy of many astronomical objects is released precisely in the far infrared and submillimeter bands.

The sensitivity of X-ray telescopes can be increased by enlarging the effective area of sensors and reducing the background level. Employment of focusing optics and increasing the accuracy of spacecraft directional orientation will make it possible to increase the angular resolution of observations. This in turn will lead to an expansion of the class of objects accessible to observation and to a more detailed determination of their characteristics.

In particular, "X-ray images" enable us to detect new distant quasars. There are several presently undetected quasars in virtually every square degree of the celestial sphere. The detection of quasars billions of light-years distant from us and measurement of their angular dimensions have demonstrated a realistic possibility of obtaining information on the processes of the formation and evolution of galaxies. At the same time scientists are interested in the sources of the immense nonnuclear energy utilized by these objects.

Radio methods enable us to discover and investigate objects from which an extremely small quantity of energy reaches the Earth due to their great distance, as well as objects of such a low temperature that their radiation falls only in the radio-frequency band. These are the longest wavelengths we employ. Therefore requirements on precision of radio telescope construction are not so rigid. And its cost is less than that of an optical telescope. A radio telescope with a 600 meter diameter and an optical telescope with a 6-meter diameter are of comparable cost, for example.

The effectiveness of any telescope depends primarily on the energy-gathering area and the maximum distance between the extreme elements of the structure.

Angular resolution long remained the "Achilles' heel" of radio astronomy. It depends on the ratio of the received wavelength to the diameter of the instrument. Since radio-frequency wavelengths are hundreds of times greater than those of visible light, the resolution of radio telescopes naturally remained poor.

As recently as the beginning of the 1950's the radio universe appeared hazy and out of focus. The "visual acuity" of instruments could be improved by only one means: by increasing the diameter of the receiving antennas. This was a complicated and costly way to go, since the cost of an instrument increases on the average proportionally to the cube of its dimensions. A qualitative leap forward was achieved by development of the radio interferometer. It is a system of antennas sited at great distances from one another by operating as a single receiver. Its angular resolution is determined by the distance between the outermost antennas -- the interferometer baseline. Radio interferometers with a baseline of several kilometers were built. Radio galaxies were discovered and identified with specific optical objects with the aid of radio interferometers. The baseline of a present-day interferometer became comparable with the dimensions of the Earth. Many pairs of antennas are deployed, operating in a coordinated mode at intercontinental distances. Baselines include, for example, Australia - United States, Crimea-California, Australia-Crimea. As a result radio astronomers have obtained an angular resolution as great as 2 ten-thousandths of a minute of angle.

By transporting one of the antennas into space, we can have an interferometer the resolution of which is limited only by the inhomogeneities of the interstellar plasma. In addition, in conditions of weightlessness it is possible to mount very large and even virtually unlimited expandability antenna fields. At the present time this is the only way to obtain the maximum possible increase in sensitivity. Such structures can be assembled of standard sections ranging from 100 to 300 meters in diameter. And it will be cheaper to build them than Earth-based structures of identical parameters. Radio telescopes larger even than the Earth can be built by assembling optimal elements.

The advantages of space-based radio telescopes will become particularly evident if antennas in the order of several kilometers in size, operating in the decimeter, centimeter, and millimeter bands are spaced to baselines extending millions of kilometers. In addition, in far space interference generated by terrestrial radio transmitters will evidently be entirely eliminated.

It is more advantageous to make large mirrors in space spherical rather than parabolic in shape. This will increase a mirror's focal length. An automatic satellite with radiometric receiving equipment will be positioned at the system's focal point. The accuracy of the mirror surface would be specified and monitored by another spacecraft positioned at the center of the sphere. In addition to advantages connected with uniformity of structural components, such mirrors have a large field of view.

By increasing the baseline to several astronomical units and using antennas several kilometers in diameter, one can increase by millions of times the sensitivity and angular resolution of a radio interferometer. This will enable scientists to search for signs of activity by extraterrestrial civilizations, to obtain three-dimensional images of astronomical objects, and to determine distances to them and their velocities.

At the present time, for example, by accurate direct methods we can determine distances to objects up to only 200-300 light-years from us. Beyond this limit all distances to celestial bodies are merely estimated by indirect methods. Radio interferometers enable us precisely to determine the distance to any remote object in the universe.

In addition to this, a new method is being developed, which will enable us, with the aid of synchronous observations with a baseline exceeding the diameter of the Earth, on the basis of utilization of the specific features of propagation of radio waves, to obtain a high-quality image of radio sources with a resolution considerably greater than that of an interferometer. This method consists essentially in the following: plasma clouds between radiation source and radio telescope act as a giant lens which forms in the vicinity of the Earth an image of the target source. It will be possible to measure its velocity of movement, to investigate the physical characteristics of the medium between source and radio telescope, etc. It is believed that this same method can be used to study the intergalactic medium, as well as plasma enveloping objects proper.

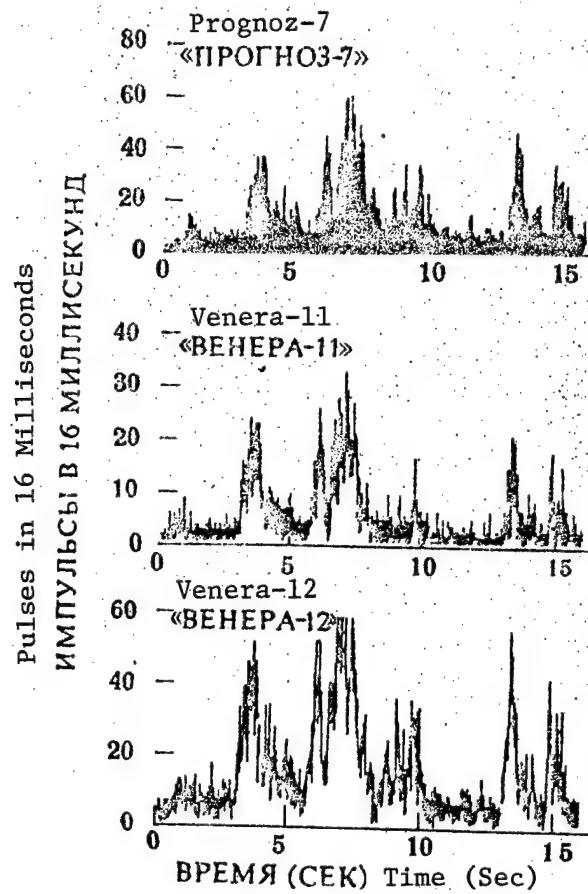


Figure 1. Burst of gamma radiation observed on 4 November 1978 simultaneously by the Venera-11 and Venera-12 interplanetary probes and the Prognoz-7 satellite.

The simplest variation of synchronous receiving consists of two antennas with the baseline between them variable in magnitude and direction. Initially this will be two radio telescopes -- a space-based and a ground-based telescope. Subsequently three space-based radio telescopes will be required. And finally, we envision for the future the establishment of a multiple-antenna ring in circular orbit, enabling us to receive highly-accurate images by the method of synchronous reception.

Thus the future prospects of radio astronomy involve increasing antenna area and spacing antennas at great distances, including the transport of telescopes into space. Of course at the first stage space antennas from 10 to 100 meters in diameter will be employed. By positioning them in comparatively close earth orbits, we can obtain high-quality images and penetrate the secrets of the structure of the closer astronomical objects, such as the core areas of our Galaxy. Construction and launching into earth orbit of the KRT-10 radio telescope was the first practical step in this direction.

Gamma-astronomical observations beyond the Earth's atmosphere began comparatively recently. The first positive result was obtained in 1968 -- discovery of

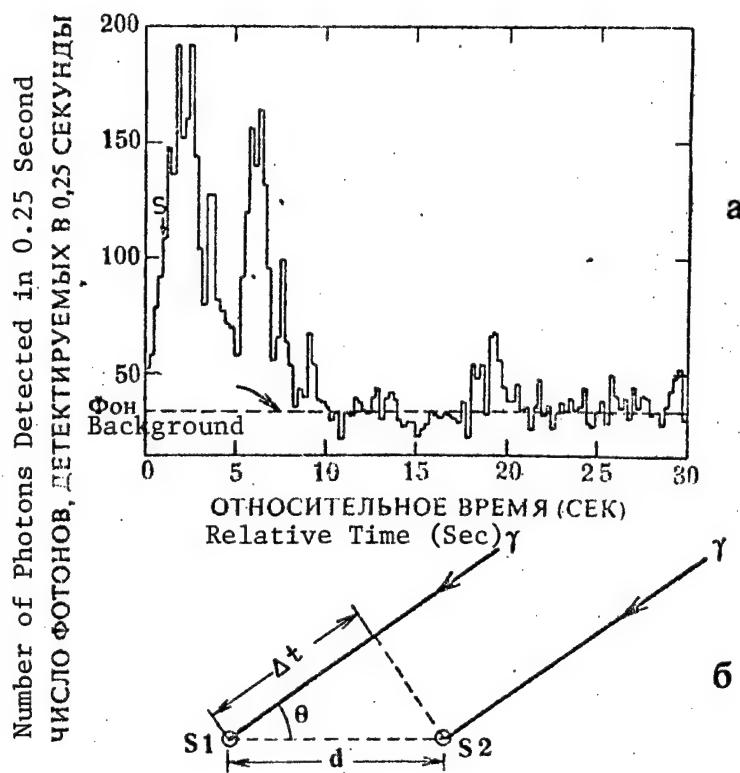


Figure 2. Burst of gamma radiation recorded on 20 October 1977 by a Sneg-2MP-1 instrument, with an accuracy to several milliseconds, enables us to determine angle θ between the direction of the burst source and a straight line between two spacecraft. Employment of a third satellite provides the capability to localize the position of the source (triangulation method).

diffuse galactic gamma radiation. The potential importance of this method, however, is exceptionally great. It is the only method to date for obtaining information on such high-energy processes as acceleration of the nuclear component of cosmic rays in distant regions of the universe and the annihilation of matter and antimatter. For example, detailed observations of the angular and spectral distribution of the intensity of galactic background gamma emissions should produce unique data on the distribution of cosmic rays in the Galaxy.

Simultaneous investigations from several spacecraft have made it possible to observe short bursts of gamma emissions running from 1 to 30 seconds. Their nature has not yet been fully clarified. A record resolution of approximately 10 seconds of angle was achieved in these observations, conducted in a joint Soviet-French experiment on board three Soviet satellites and interplanetary probes, as well as on several U.S. space vehicles. Scientists utilized the method of measuring delay time in the arrival of a burst at several spacecraft positioned millions of kilometers apart in space. Accuracy of determination of burst arrival time amounted to several milliseconds (figures 1 and 2).

The principal difficulty in exploring the gamma emissions band is connected with the low intensity of gamma emission sources. This becomes particularly obvious if one measures intensity in number of arriving photons. Although the energy of each photon is considerable, amounting to hundreds of MeV, tens of millions of times greater than the energy of quanta of visible light, it is difficult to detect hundreds and thousands of sources. This requires a detector with an area of about $1 \times 2 \text{ m}^2$, and it will be necessary to observe each source for a period of almost 10 days. Of course such instruments are already being built. In particular, development has been completed on a gamma telescope with a sensitive area of one and a half square meters. Investigations will be conducted jointly by Soviet and French scientists.

A possibility in the not too distant future is a gigantic Earth satellite measuring several hundred meters in size and with a mass of thousands of tons. It will carry an assemblage of telescopes which will cover the entire span of electromagnetic-emission wavelengths. They will include a gamma telescope measuring a good dozen meters in size, a group of X-ray telescopes, an ultra-violet and optical multitelescope, the mirror of which, like the compound eye of a dragonfly, will consist of hundreds of meter-size mirrors and, finally, a gigantic radio telescope measuring several hundred meters across. Such complex and extremely costly instruments can be built only if financed by all the countries in the world. And all the Earth's astronomers will utilize them, and they will be serviced and maintained by an international crew.

Space should be a domain of peace. The Soviet Union stoutly advocates precisely such a policy. The Earth can do without "cosmic orbits" of war. The Soviet Union proposes entering into an international treaty banning the deployment in space of all weapons of every kind. In addition, our country is prepared to enter an agreement altogether banning the employment of force both in space and from space. These are realistic ways to prevent the militarization of space and to turn it into a realm of exceptionally peaceful scientific investigations which are in the interests of all mankind.

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INHERENT PROBLEMS OF LOW-LEVEL FLYING REVIEWED

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[Article, published under the heading "Flying and Psychology," by Doctor of Medical Sciences and Professor Maj Gen Med Serv V. Kopanov; Doctor of Medical Sciences and Professor Col Med Serv V. Yegorov: "At Low Altitudes"]

[Text] Flying at low level and at comparatively high speeds represents certain difficulty and demands of pilots special skills and strong psychophysiological conditioning. Training for low-level flying is structured taking into account the specific features of man's activity in these conditions. What are these specific features?

At low level it is much more difficult to maintain course, speed, and altitude. Dropping below a given altitude presents a genuine stress to flight safety, while an increase in altitude, especially in combat conditions, makes it easier for an aircraft to be detected by hostile radar. Aircraft altimeters and radar altimeters do not always give accurate information, and therefore the pilot is compelled to monitor height above ground level simultaneously both by instruments and visually. This leads to a unique psychological conflict, which has been called attention splitting: while flying on instruments, a pilot is acutely in need of visual verification of his aircraft's position in space, and vice versa.

Errors in visual determination of height, however, especially during the period of low-level flight training, can amount to 100 percent, as a rule in the direction of overestimation. Following suitable practice, however, the magnitude of error diminishes to plus or minus 10 percent.

As studies indicate, a pilot spends on exterior observation during low-level flight, depending on the mission, from 50 to 96 percent of his total time in flight. The figure runs from 5 to 68 percent when flying at medium and high altitudes in VFR weather. Practicing the ability of visual estimation of height with periodic checking of altimeter readings assumes exceptional importance in the initial phase of mastering low-level flying.

When shifting one's gaze from ground references to the instruments, a certain time is required to evaluate instrument readings. The faster a pilot switches his attention, the less time he requires to determine the aircraft's actual position in relation to the ground. In teaching pilots correct distribution and

switching of attention, commanders employ additional practice sessions on cockpit simulators, as well as game-type sports and special physical exercises which develop powers of attention and reaction speed.

A characteristic psychophysiological feature of pilot activity during high-speed low-level flight is increasing complexity of operation of the visual analyser. Vibrations of the instrument panel and pilot's head occur in turbulent air. These vibrations, which are out of phase with one another, in spite of the pilot's attempt to concentrate his gaze, lead to deformation of the image on the retina and to temporarily diminished visual acuity to 0.3-0.5. Large linear displacements of the ground surface toward the aircraft in turn make visual orientation difficult. The distance at which reference points are visible decreases substantially, and there is little time from their initial appearance in the field of view to the moment they are overflowed. In addition, on a sunny day highlights on the canopy glass also hinder orientation. Experience indicates that the ground surface is viewed best through the forward and side canopy glass in a sector running from 20° left to 10° right of the aircraft's longitudinal axis.

During night flights the differing brightness of ground reference points disturbs the pilot's adaptation to darkness, which makes it difficult to estimate distance to the ground. In connection with this, time spent flying on the gauges is greater than under daylight conditions. There have been instances where pilots have had the illusion that their aircraft was turning when they shifted from instrument to visual flight, an illusion caused by the differing angular velocities of displacement of reference points located at different distances from the aircraft.

As a result prominent objects on the terrain are used as reference points. In the early spring and fall, however, the mottled appearance of the earth's surface diminishes their contrast, while in winter, with a snow cover, many natural landmarks (rivers, lakes) disappear, which makes visual determination of height above ground level more difficult. When searching for targets in such conditions, distraction of attention to look at instrument readings can lead to failure to spot terrain reference points and even disorientation. According to French aviation psychophysicists, for example, who analyzed more than 1,000 high-speed low-level flights, in 100 cases the pilots lost their terrain orientation and were unable to get to the target area.

In view of the fact that at high speeds time available for spotting and identifying an object is extremely limited, experienced pilots deliberately select a smaller number of reference points and concentrate their attention exclusively on high-contrast landmarks with easily recognizable characteristics. Naturally such a flight is preceded by thorough preparation. The pilot carefully studies the map or chart, works out the route in detail, designates requisite check and reference landmarks, and calculates flying time to each. As a result of thorough, comprehensive training, he utilizes the psychophysiological mechanisms of anticipation during flight. This phenomenon consists essentially in the fact that, when anticipating the appearance of an object, a person recognizes it in 35 to 40 percent less time than with a normal perception process. In other words, there takes place optimization of the process of perception in a situation where time is critically short.

Low-level flying in rough air is rather tiring, due to frequent and sometimes very substantial changes in alternating load factors. Depending on conditions, load factors can vary across a broad range from 0.05 to 3. Vision not only worsens in rough air, but the pilot's entire organism also experiences adverse sensations. Vibrations cause an increase in defensive-response tonic stress of the body muscles, and latent and marked forms of motion sickness develop, including in those pilots who on normal missions are not subject to these phenomena.

Various means of conditioning the vestibular mechanism are employed to prevent this. In addition to work on the trampoline, squirrel cage, acrobatics and gymnastics, with which flight personnel are well familiar, a simple and effective group of exercises is recommended, including rapid head movements forward and rearward, to the sides, and circular movements at a rate determined by how the subject feels, but within the range of 20 to 120 motions per minute. The entire group is performed within a period of 5 minutes -- seated, standing, and moving -- during morning calisthenics and whenever time and circumstances allow.

The complex nature of a pilot's activities during low-level flight naturally causes a high degree of emotional stress. Optimal magnitudes of stress as a rule are of a toning, sthenic nature, but sharply expressed forms diminish work efficiency. Extensively employed to prevent potential emotional stress which occurs in the initial period of flight training is autogenous drill, aggregates of special exercises recommended to flight personnel. They must be performed following consultation with and under the supervision of a flight surgeon. In planning flight operations it is very important to consider the dynamics of a person's work efficiency in the course of a flight operations shift. It is of a phase nature and consists of periods of working-in, optimal efficiency, complete and unstable compensation during the development of fatigue. The first and last periods are characterized by the fact that a person's work efficiency is not maximum. Therefore it is advisable to schedule the most difficult mission second during a flight operations shift, and less complex tasks first, third and following. Optimal time between sorties is 30-40 minutes.

When complications occur during a flight, the pilot's subjective physical well-being worsens. The pilot should report this fact to his ground controller and make a decision to continue or terminate the mission. Following are the most common signs of subjective worsening of physical well-being in flight: fatigue, diminished ability to function, nausea, dizziness and headache, heavy head, and inability to focus attention, as a consequence of which untypical mistakes are made and certain actions omitted in performing cockpit procedures.

Low-level and extremely low-level flying differs sharply from all other flight configurations, even with excellent visibility and calm air. And of course a pilot should fly such missions with the organism in a good functional state. It is for good reason that flight surgeons and commanders keep a close watch to ensure that flight personnel correctly follow daily routine and observe a properly-regulated regimen of work, rest and diet, as well as medical recommendations. Excellent moral-political qualities, a pilot's psychological stability and good health are important components which ensure successful accomplishment of a sortie and flight safety.

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U.S. GOVERNMENT ACCUSED OF 'MILITARIZING' SPACE

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[Article, published under the heading "Contemporary Problems," by Lt Col Yu. Mikhaylov: "For Space Without Weapons"; based on materials in foreign publications]

[Text] Today space hardware is being utilized to an ever increasing degree in the interests of man's vital needs: marine navigation, communications, weather forecasting, observation of the state of terrestrial vegetation, mineral detection, agricultural and forest acreage planning, and search for vessels in distress and downed aircraft. The Soviet Union believes that space should be peaceful and free of all weapons. It is not surprising that the USSR peace initiative calling for preventing the ominous and real threat of spread of the arms race into space continues to occupy the attention focus of the foreign press. It is specifically embodied in a draft treaty entitled "On Banning the Use of Force in Space and from Space." The Soviet side has expressed the hope that the United States will follow the example of the USSR, which has announced a unilateral moratorium on the launching of antisatellite weapons into space.

The danger of militarization of space is become heightened, due to the U.S. Administration's policy aimed at gaining military superiority over the USSR. Washington views this new domain of U.S. activities as an "absolute position," conquest of which allegedly opens up the way to domination on Earth. President Reagan has advanced the notion of so-called "space defense," which calls for deployment of certain types of weapons in earth orbit or employment of Earth-based weapons against space objects.

"Following many years of relative equilibrium and stability," writes the London FINANCIAL TIMES, "an arms race in space is beginning. And antisatellite weapons have immediately occupied the central focus of this arms race. The United States is currently allocating 15 billion dollars a year to the space program, and plans call for a real increase of 10 percent annually over the next five years. For comparison we should note that the military budget as a whole will increase by 7 percent."

White House plans to build up U.S. military potential in space became a component part of the space policy adopted in 1982, which aims at priority

development and deployment of space weapons and constitutes an obvious threat to mankind. Militarization of space will raise the level of military confrontation in the world, will increase distrust in relations between nations, and will delay prospects of reaching disarmament agreements. And as a consequence of this, there will be an increased probability of war on Earth.

What is the Soviet Union's position on this question? After launching the world's first satellite, in March 1958 the USSR at the same time proposed a program of total demilitarization of space. But this proposal, submitted for consideration at the 13th Session of the UN General Assembly, failed to gain the support of the United States and its allies.

The Soviet Union submitted a revised draft agreement. The question of space and international cooperation in exploration of space was not linked to other problems. Both that draft proposal and other USSR proposals in this area, however, were not given support by Washington. The United States sought to retain a free hand in the militarization of space.

The Soviet Union persists in urging the adoption of partial measures to restrict the military utilization of space. Actions by the USSR, supported by other peace-loving nations, have made it possible to achieve certain results.

In 1963 a treaty banning the testing of nuclear weapons in the atmosphere, in space, and under water was adopted at Soviet initiative. Article 1 of this treaty contains a pledge by the signatory nations "to prohibit, prevent, and not to produce any test detonations of nuclear weapons or any other nuclear explosions" in the three environments -- under water, in the atmosphere, and in space.

A treaty on the principles of activities by nations in the exploration and utilization of space, including the Moon and other celestial bodies, went into effect in 1967. This treaty was also drawn up at the initiative of the Soviet Union. This treaty, which regulates the activities of nations in the area of exploration and utilization of space, formally articulates provisions calling for partial demilitarization of space and total demilitarization of the Moon and other celestial bodies. Signatories pledged not to place into earth orbit objects carrying nuclear or other types of weapons of mass destruction, not to place such weapons on celestial bodies, and not to deploy them in space in any other manner. The Moon and other celestial bodies are to be utilized solely for peaceful purposes.

In 1972 the USSR and the United States signed a treaty limiting antiballistic missile systems. It prohibits the development, testing, and deployment of space-based ABM systems or components.

A convention was adopted in 1977, proposed by the USSR, prohibiting military or any other hostile utilization of means of affecting the natural environment. The need for this international agreement was dictated by the development of devices which could be utilized for military or other hostile purposes. For example, the Western press discussed the possibility of spraying bromine compounds from satellites to create "windows" in the Earth's ozone layer, through which cosmic radiation would reach the Earth's surface unimpeded and destroy all living things.

These agreements blocked the path of an arms race in space, but not entirely. In a strict legal sense there still remains open the possibility of utilizing those weapons which do not come under the definition of weapons of mass destruction. This is why the Soviet Union introduced a proposal calling for a treaty banning the deployment in space of weapons of any type. A draft treaty was submitted to the United Nations in August 1981. Formulation of its text in the Committee on Disarmament, however, has not yet commenced due to the obstructionist position taken by the United States and a number of other NATO countries. The United States in fact opposes prevention of an arms race in space.

Addressing this problem, CPSU Central Committee General Secretary Comrade Yu. V. Andropov stated in an interview with the magazine DER SPIEGEL: "...We are convinced that it is necessary to go even further: to adopt a treaty totally banning the use of force both in space and from space." But Washington pursues other aims. Pentagon officials state: "That country which achieves dominance in space automatically acquires the requisite instruments to achieve its political goals, if not total control of our planet, and will be able to influence the course of history." The United States has commenced implementing its ideas on conquering space. Development of the ASAT antisatellite weapon system, employing the F-15 fighter as a launch platform, is in the completion stages. The USSR and United States held talks on antisatellite systems in 1978-1979. Washington unilaterally broke off these talks, since they might impede the United States from developing antisatellite weapons.

The Space Shuttle program is being taken over for military purposes. It is to become the foundation of U.S. military space programs. A U.S. national space policy directive stresses the priority of employing Shuttle missions for military purposes. Construction on a new space center is in full swing at Vandenberg Air Force Base in California. Military Shuttle missions will be launched from this facility. Military satellites, Pentagon orbital command posts, and new types of space weapons are scheduled to be launched during Space Shuttle missions. It is believed that equipping the Space Shuttle with a special manipulator ("mechanical arm") will enable it to "inspect" satellites in orbit, pull them out of orbit, destroy them or return them to Earth in the Shuttle's cargo bay.

The Pentagon is putting its money on a space-based laser weapons race. According to the journal AVIATION WEEK AND SPACE TECHNOLOGY, the Department of Defense is planning to increase appropriations for this program 12-fold by 1988. As is reported in the press, the Pentagon has already let contracts for the development of all major components for a space laser system. Contractors include Lockheed Aircraft, Eastman Kodak, and TRW. A laser weapon may be ready for testing by 1993; it will cost 30 billion dollars.

The decision has been made to commence development of new-generation antisatellite systems based on particle-beam weapons. This decision runs counter to the 1972 treaty limiting ABM systems, which prohibits the development of space-based antimissile systems. The U.S. Administration claims that the decision to develop a new antimissile weapon is a purely defensive measure, indicating White House "concern" about "saving mankind" from the nuclear threat. This step taken by Washington, however, is directed not toward preserving peace but toward

flagrant destabilization of the existing strategic balance. Plans to develop a large-scale antimissile system, with a simultaneous buildup of nuclear arms, pursue the aim of preparing to deliver a nuclear first strike. In the opinion of U.S. strategists, an antimissile system will make it possible to paralyze Soviet ICBMs and deny the USSR the capability to deliver a retaliatory strike and effectively to defend itself.

The U.S. President has appealed to American scientists to commence developing powerful antimissile systems. These are not mere empty words. Behind them stands the administration's intention to provide generous financing of research activities aimed at developing space-based antimissile systems (2.6 billion dollars in fiscal year 1984 and 3.1 billion in FY 1985). In coming years the United States is planning an overall more rapid rate of growth of expenditures on military space programs, above and beyond an overall increase in the military budget. The Pentagon, according to the press, is counting on generous appropriations for space systems development, and is expressing the hope that such systems can be deployed by the end of the century.

U.S. leaders are improving the organizational structure of agencies involved in military space activities. A space command was formed in the organizational structure of the U.S. Air Force in 1982. This has become the organizational basis for preparing for and fighting a war in space and from space. There exist plans for reorganizing this command into a Joint Space Command for the U.S. Air Force, Navy, Army and Marines. Establishment of the space command was followed by the creation of space technology research centers, a space operations committee, an interagency coordination group for problems of space policy, and a joint space operations center is being built. Highest-echelon military circles are discussing the inevitability of establishing U.S. space forces. According to a statement made by top U.S. Air Force officials, these steps are dictated by the swift expansion of U.S. military space programs.

U.S. private business is being drawn into space activities. Private companies have been authorized to purchase rocket boosters to launch vehicles into space. In the opinion of the U.S. Administration, satellite launchings paid for by the funds and resources of private companies will free additional Space Shuttle missions for military purposes. Giving private companies access to hardware representing considerable hazard can have serious consequences.

Thus the United States is undertaking feverish efforts to militarize space. Reckless plans to wage war in space once again expose the hypocrisy of Washington's "peace-seeking" policy. In these conditions the task of preventing the arms race from spreading into space assumes ever increasing acuteness and is becoming one of the major thrusts in the struggle by the USSR and other countries to preserve world peace.

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